

AGRICULTURAL SURVEY

OF

San Benito County

CALIFORNIA

MADE FOR THE

SAN BENITO COUNTY

CHAMBER OF COMMERCE

AND THE

BOARD OF SUPERVISORS



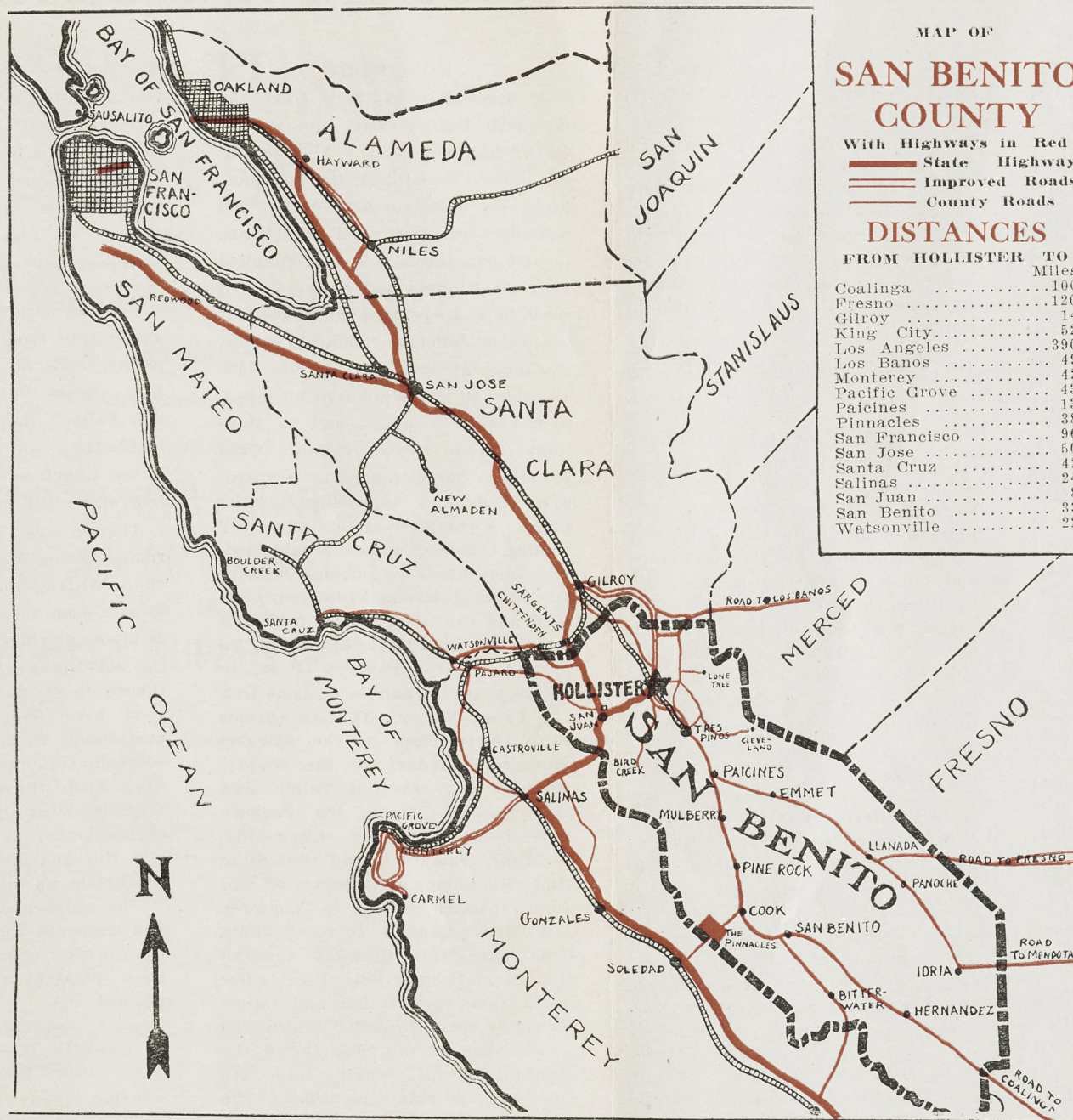
BY THE

California Development Board

of San Francisco, California

Arranged by
H. H. WHITMORE

THALIA WEED NEWCOMB
Field Agent



Copy 1914 15

SAN BENITO COUNTY ROAD DIRECTIONS AND DISTANCES

COAST ROUTE SOUTH FROM SAN FRANCISCO TO LOS ANGELES, ETC.

Leave Gilroy for Hollister either by way of Pacheco Pass road to San Felipe and thence south to Hollister, or by way of San Juan and east eight miles direct to Hollister. Thence leaving Hollister (0.0) proceed straight out San Benito street. At end turn left and follow fine county road to Tres Pinos (7.3 m.). Turn right, follow main highway to Paicines (12.7). Keep straight ahead on main road (Road to left goes to Fresno over Panoche Pass), passing road on right (18.5 m.) leading to Mulberry. Cross bridge over Rocky Gorge (22.5 m.). Cross bridge (24.5 m.) and take right fork at sign "Bear Valley Road," (Road to left leads to San Benito), follow Bear Valley road, church on left after making turn. Foot of long, easy up-grade, fine road. Summit of grade (26.1 m.). Pass school house on left (30.5 m.). Pass gate on right with sign "Road to Pinnacles National Monument, Six Miles" (31.5 m.). Continue straight ahead to Reverse Forks (34.9 m.). (Left fork comes from San Benito). Bear right and keep straight ahead to top of short descending grade (43.3 m.). At foot of grade (43.5 m.) turn sharp right, pass cabins on right and proceed across flat to pumping station, oil tanks, etc., at Bitterwater (45.7 m.). Parties can either turn right at pumping station and follow to King City (60.5 m.), thence over State Highway to Bradley and San Miguel; or follow south from Bitterwater to Lone Oak, Peachtree, Grant Ranch, Luther Ranch, Valleton to San Miguel.

SAN BENITO COUNTY

and the valley surrounding Hollister, the county seat, are between the Gabilan or Santa Cruz range on the west, and the Coast range on the east; which peculiarly fortunate natural situation gives it the benefit of the daily breezes of the ocean from Monterey Bay, tempered to a delightful balminess, while excluding the tropical heat of the San Joaquin Valley.

TO FRESNO AND ALL SOUTH SAN JOAQUIN VALLEY.

TO PACHECO PASS ROAD FROM MONTEREY BAY POINTS:

Take road to Hollister at junction with State Highway at south town limit of San Juan; thence 8 miles east to Hollister, junction of Fourth and San Benito streets; thence north to Dunneville Corners, 6 miles; thence east to water tank on right, opposite Ausaymas road; thence north by Ausaymas road. Cross Pacheco creek over steel bridge and to junction with Pacheco Pass road, going more to easterly at big junction sign.

GILROY TO COALINGA.

Same route as to King City or San Miguel as already detailed to Lewis creek south of Bitterwater; thence southeasterly via Priest Valley to Coalinga. Or, leave Bear Valley road south of Mulberry, at junction with road to San Benito, thence via San Benito postoffice and Hernandez to Coalinga.

All San Benito County roads are good roads and afford agreeable and advantageous "short cuts" for travelers going in any direction through the central coast counties.

HOLLISTER

Is accessible by rail from the Southern Pacific Coast line at the Gilroy junction, over a 15-mile run southerly (Tres Pinos, the terminus, being six miles further south), and has three passenger and mail trains in and out daily; it is well supplied with good hotels and banks, is well sewered and equipped with excellent service of delicious mountain water. Distances by rail are: To San Jose 45 miles, to San Francisco 95 miles, to Oakland 90 miles, and to Monterey, Pacific Grove or Santa Cruz 45 miles; the distances by automobile roads are approximately the same. A complete system of county bonded highways is now established. The most direct wagon and automobile roads from San Francisco, Oakland and San Jose to the following points are through Hollister, viz: To Fresno via the Panoche Pass; to Coalinga via Hernandez or Lone Oak and Priest Valley. To Los Angeles cross Lewis creek at the extreme southern boundary of the county. Between San Joaquin Valley and Monterey Bay points via Pacheco Pass road, Ausaymas, Dunneville, Hollister, San Juan and the State Highway immediately south of San Juan, through Salinas to Monterey and Pacific Grove. To reach Santa Cruz take State Highway through San Juan to junction, three miles north, then turn to left and follow Riverside road through Watsonville.

A glance at the map shows the convenience of these respective routes to the points mentioned. The Pinnacles National Monument is in San Benito county, 38 miles south of Hollister; Fremont's Peak is in

San Benito county, 12 miles west of Hollister; the New Idria mines (the second largest quicksilver mine in the world) is in San Benito county, 60 miles south of Hollister. The watershed of San Benito county is drained by the Pajaro river into Monterey bay on the west.

For an enjoyable all-day Sunday outing from San Francisco bay points, take State Highway to Gilroy; thence Pacheco Pass road to San Felipe; thence south past seed farms to Hollister; 4 hours, 99 miles. Lunch at Hollister; good hotels and restaurants.

Thence west to San Juan (fine road), through San Juan Valley orchard district and past the world's largest seed farms, a beautiful view in blooming time. At San Juan visit the old Mission San Juan Bautista; thence to Watsonville; thence take road over Santa Cruz mountains past Mount Madonna (Henry Miller's summer residence), thence down easy grade through Uvas valley to State Highway, north of Gilroy, and thence home.

A fine and interesting all-day trip during the spring, summer and fall.

The absence of excessive rainfall and improved condition of San Benito county's principal roads make them pleasant and passible at all seasons.

GILROY TO PANOCHÉ AND FRESNO.

From Gilroy via Hollister and Tres Pinos to Paicines; thence take left-hand road to Emmet, Panoche Pass, Llanada, Panoche postoffice.

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THALIA WEED NEWCOMB
Field Agent

ANNUAL REPORT OF THE COMMISSIONER OF THE LAND OFFICE

FOR THE YEAR
1887

ALBANY:
J. B. LEECH, JR.,
PRINTERS.
1888

ALBANY: J. B. LEECH, JR., PRINTERS.

ALBANY: J. B. LEECH, JR., PRINTERS.

FOREWORD

It is the aim of the San Benito County Chamber of Commerce to be of real service to the entire county in the promotion of every enterprise, industry and in the development of every resource.

In order to carry out this plan it was considered necessary to compile data and information that would be helpful and to this end the

California Development Board

was authorized to make a full and complete survey of the County in 1917. An expert carefully covered the field and the ensuing pages give the result of this work. The information contained is unbiased and to be relied upon.

Every possible effort was made to collect facts from the business man, the farmer, the county officers and the railroad officials regarding business and farming conditions and practices, productivity of soil, climatic conditions and shipment of products. In every case an average has been made extending over a period of years or from several individuals in each line.

This survey has been revised and the facts and figures brought up to date by the County Horticulturist, Leonard H. Day, and the Secretary of the Chamber of Commerce, H. H. Whitmore, during May and June, 1919.

This booklet has been divided into eight parts, giving first the location in California and a general descriptive history.

Following the Descriptive History section are the industries in practically their order of importance and wealth to the county and also to a general idea of sequence.

The fruit industry is treated next as it is coming rapidly to the front and San Benito County has a splendid fruit future.

Then Dairying, The Cattle Industry, Poultry, General Farming, Mining, and all the districts of the county and the principal characteristics of each.

San Benito County Chamber of Commerce

Hollister, San Benito County, California.

Where, "Blest With Nature's Best, A Little Effort Does The Rest."

F. L. BARNHISEL, President
WM. PALMTAG, Treasurer

J. M. O'DONNELL, Vice-President
H. H. WHITMORE, Secretary

DIRECTORS:

FRANK B. ABBE
R. P. BRUBAKER
F. L. BARNHISEL
B. W. BARRETT
P. F. BROWN
C. N. HAWKINS
A. G. FRUITS
E. E. HOLBROOK
M. F. HOYLE
CARL LADD
R. P. LATHROP
S. H. LAVAGNINO

D. J. LAWN
J. M. LEONARD
GEO. W. McCONNELL
JACK MAYFIELD
A. D. McKINNON
J. M. O'DONNELL
WM. PALMTAG
DENIS PATERSON
TONY TAIX, Jr.
H. H. WHITMORE
GEO. WAPPLE
W. E. WILSON

To the activity of the San Benito County Chamber of Commerce may be given credit for much of the aggressive development work which has been done in San Benito County. This organization is fully alive to the needs of the whole county and has been one of the strongest factors in bringing about civic improvements, furthering the cause of good roads, standing behind every important movement for community good or advancement as well as furnishing information, advice and guidance not only to the traveler through the valley, but for the local farmer or business man.

During the war period the Chamber of Commerce was behind every activity and aided in every campaign for funds to help the Nation to a successful conclusion of the war. San Benito County went "OVER THE TOP" every time, raising cheerfully every cent it was called upon to raise by the Government, and in all the various drives for the relief of sufferers in other countries. Practically all of its time was devoted to war work and to the securing and placing of adequate labor for the harvesting of the crops. The Chamber of Commerce is the official labor bureau of the County.

In order to more clearly define the work of the Chamber of Commerce and to be of better service to the people living in Hollister, and to those outside of the County, the

HOLLISTER MERCHANTS ASSOCIATION CREDIT BUREAU
was organized in March, 1919, to handle everything pertaining to the welfare of the city of Hollister, and

COMMUNITY COUNCILS

were organized under the auspices of the State Readjustment and Place-

ment Bureau, at Ausaymas, Pacheco, Hollister, Anzar, Panoche, South Side and Fairview. Others will be organized.

The Merchants Credit Bureau has been of immense benefit to the merchants in the stabilizing of credits and in bringing them together in a closer relation. The Community Council meetings are held monthly and speakers on subjects pertaining to the principle industry of each section have been brought in from the University of California, and the farmers and orchardists are realizing that the Chamber of Commerce is the clearing house for information and labor and is of help to the entire community. In other words it has become the center of the activities of the county.

Much of the credit of the work of the Chamber of Commerce is due to the splendid co-operation accorded by the

SAN BENITO COUNTY BOARD OF SUPERVISORS

W. S. PRESCOTT, Chairman

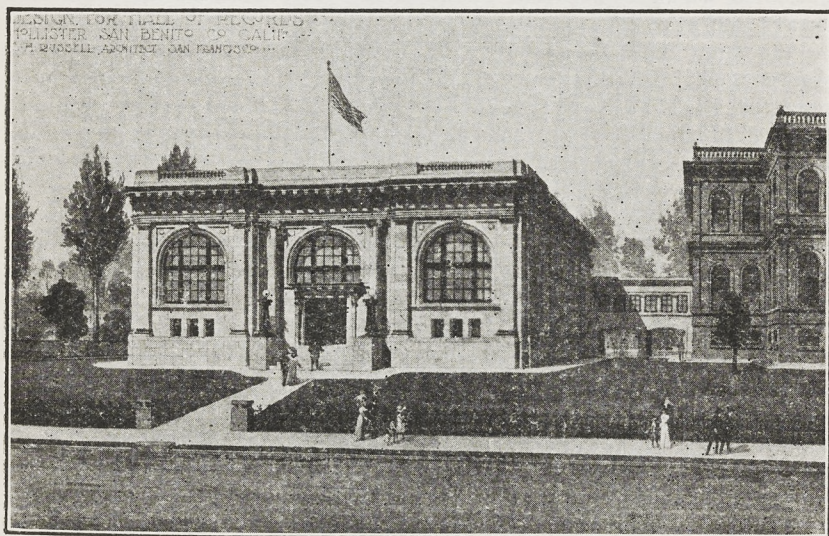
J. F. ETCHEVERRY

HUGH FRENCH

R. G. GARNER

PETER FRIIS

who have cheerfully levied the advertising tax each year, which fund has taken care of the advertising at various Land Shows and has enabled the Chamber of Commerce to publish this field survey in 1917 and at the present time.



HALL OF RECORDS, Hollister.

DESCRIPTIVE HISTORY

LOCATION

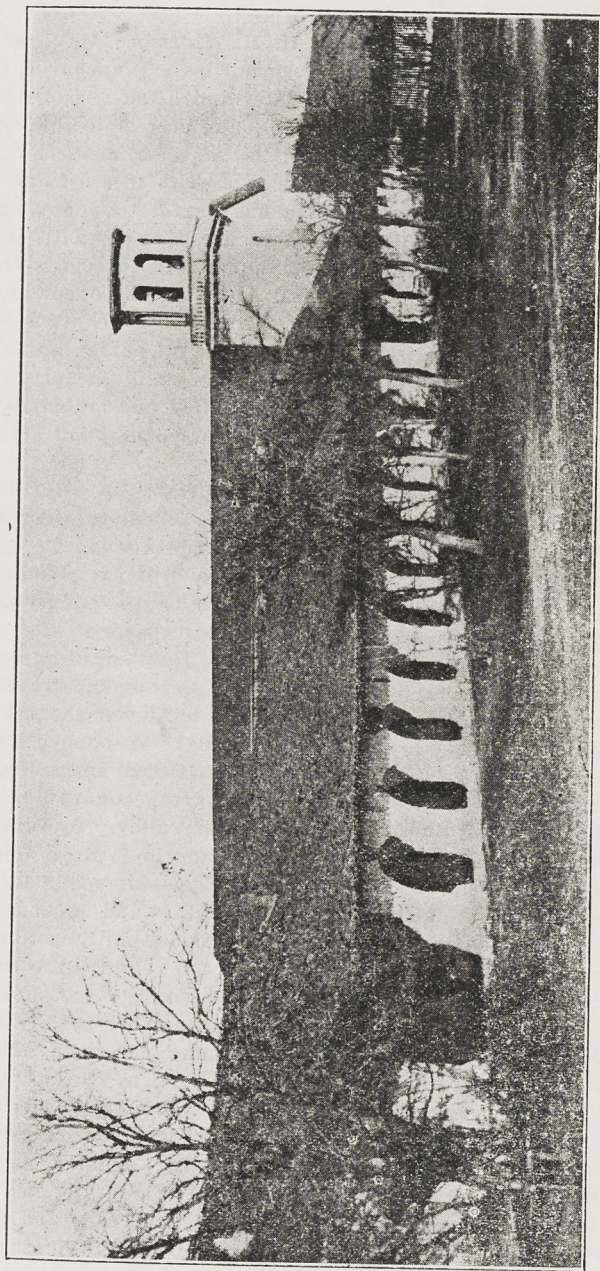
AUTHORITIES: George W. McConnell, County Assessor; J. J. Croxon, Sheriff, Hollister; Mark Regan, San Juan.

San Benito County was created from a part of Monterey County, February 12, 1874, and its early history is among the interesting data of California. It is situated about 20 miles in an air line from Monterey Bay on the West. Bounded on the north by Santa Clara, on the east by Merced and Fresno counties, on the south by Fresno and Monterey counties, and on the west by Monterey County, San Benito County is accessible by its splendid roads to the principal points around the southern end of San Francisco Bay, the coast and the San Joaquin Valley.

SAN JUAN BAUTISTA MISSION

In the town of San Juan remain several of the most picturesque and interesting landmarks of the days of the old *Hidalgos*. The Mission San Juan Bautista, founded by the Franciscan Fathers in 1797, recalls the days of early conversion among the Indians. It is 140 feet long, and the cloisters 30 feet wide, and is in a creditable state of preservation considering the small amount of money which has been accessible for its restoration and rehabilitation. The walls of the church are fashioned of adobe brick made by the Indian converts and are four feet thick. Many of the original images of the saints, altar cloths, vestments, and altar equipment which came from Spain in the early part of the eighteenth century and were used or stored in other Missions until the completion of the San Juan Bautista Mission, are still on view in the relic room of the establishment. Gnarled, century-old olive and fruit trees and vines burdening the walls and arbors under which the reverend fathers read and reasoned in the early halcyon days of California, still contribute their quota of fruits. The original rafters were held in place by raw-hide thongs and the window and door frames by wooden pegs—before the day of nails. A recent contribution by one of the societies interested in the preservation of California's historic buildings, has been of sufficient proportions to banish the fear that encroaching time would effectually devastate this venerable monastery and church.

Across the Plaza from the Mission is the Hotel Plaza, the first story of which was built in 1792, before the founding of the Mission. Here the overland travelers from Monterey, north and south, found a place of refuge and cheer. When the larger portion of San Benito county was Spanish grants and a day's ride was but a part measurement of many of their boundaries, this hotel was perhaps the finest and most gay with its crowds of Spanish *grandeess*, buccaneering adventurers and close guarded *senoritas*. The register of 1861 and 1862 gives eloquent testimony of the notable guests who made the Hotel Plaza their stopping place. Next door is the building used as temporary headquarters by General Castro in the early '50's. All through the mountains one may still find old adobes



MISSION SAN JUAN BAUTISTA, FOUNDED 1797.
Located at San Juan, San Benito County.

fast falling into decay, which mark the abiding place of early padrones, who were the foremen of the vast ranches of that day.

PINNACLES

AUTHORITIES: S. C. Hain, Tres Pinos; H. H. Whitmore, Hollister.

The Pinnacles referred to in the early chronicles of Vancouver, the explorer, are situated 38 miles south of Hollister and a good road has been constructed by the Chamber of Commerce to make accessible this wonderful natural monument. The Pinnacles district has been made a National Monument of 2080 acres. During the past two years interest and appreciation from those who have viewed them has begun to popularize this interest spot for the Sunday motorist. Here are seen gigantic outcroppings of imposing igneous rock, nature fashioned into turrets, spires and multi-colored facades. The chain of natural caves affords opportunity for exciting exploration to the adventurous. Situated so conveniently to the neighboring cities, lies one of the most beautiful parks in the State, heretofore but little known by the hiker or lover of scenic beauty. Visitors who desire may obtain reliable guides in Bear Valley and accommodations if desired. The two groups of monuments cover some 2080 acres and the trip is well worth taking.

ROADS AND TRANSPORTATION

AUTHORITIES: John Etcheverry, Tres Pinos; C. R. Olive, Agent Southern Pacific Company, Hollister; Mark Regan, San Juan.

San Benito County has every reason to feel proud of its splendid roads which traverse every important district. Entering the county at Sargents, the State Highway cuts across the western part of the county, winding over the San Juan grade and joining San Jose and Monterey, and a lateral of eight miles from San Juan to Hollister makes travel from that point favor the State highway rather than either of the other and shorter roads which lead north out of the county. A bonded graveled road traverses the length of the Hollister, San Benito and Bitterwater Valleys, and one may digress just before reaching the county line on the south towards Coalinga and the lower San Joaquin Valley. By turning off this road at Paicines and going through the Panoche Valley, one may reach Fresno over the historic Panoche Pass. Excellent roads lead over the Pacheco Pass into the upper San Joaquin Valley and much effort is being expended at the present time to improve road conditions along this route and an eight mile lateral is included in the recent State Bond issue of \$40,000,000 to connect Hollister on a direct line to the Pacheco Pass Highway. Santa Cruz and Monterey Bay points are readily reached over good roads and are the Mecca of the Sunday motorists, from San Benito County. A complete system of bonded highways exists through the county and the increased patronage of the stores in the towns and the report of the fruit houses, milk condenseries and creameries, show that the farmers in the mountains are awakening to the advantages commercially of good highways and their uses. San Benito County stands second to no Central California county in the matter of her roads and whether the traveler be in motor car, buggy or afoot, he will find most of the roads good, with the exception of two or three and these are to be improved this year.

Automobile stages run from Hollister to San Jose and San Juan, leaving four times a day on schedule. Stages also connect San Benito Valley and the New Idria mines with Tres Pinos, leaving daily and carrying small freight, mail and passengers. Automobile stages leave twice daily from Hollister to Salinas and Monterey Bay points, and also to Watsonville.

The oldest stage line in the county, the Regan Mission Line, connects Hollister with the trains on the main line Coast Division, as well as with San Juan. This stage service was formerly a high Concord coach behind four-in-hand, but the modern motor bus has succeeded it.

The Hollister Valley branch of the Southern Pacific Company has Tres Pinos as its southern terminal and enjoys terminal rates on east bound freight. Three passenger and mail trains leave Hollister and Tres Pinos each day, making the round trip to the main line at Gilroy. The Central California Railroad connects Chittenden on the Coast line of the Southern Pacific with the Old Mission Portland Cement Works, at San Juan, by 11 miles of railway, over which the output of the works, passenger and freight are transported.

CHURCHES

AUTHORITY: Rev. W. A. McCausland, Christian Church, Hollister.

Churches, according to their religious cults are found throughout the principal towns in the county and are all active. Each has its auxiliary branches such as the Epworth League, Christian Endeavor, W. C. T. U., etc. This latter under the leadership of its president, Mrs. C. S. Danks, has done far reaching and effective work in controlling the saloon element and in organizing chapters throughout the county. The churches in the county are:

CATHOLIC, Hollister, San Juan and Tres Pinos.

CHRISTIAN SCIENCE, Hollister. CHRISTIAN, Hollister.

CONGREGATIONAL, San Juan and Paicines (temporary, has visiting pastor each year.) EPISCOPAL, Hollister and Paicines.

METHODIST EPISCOPAL, Hollister, Bear Valley and San Felipe.

METHODIST SOUTH, Hollister. PRESBYTERIAN, Hollister.

NEWSPAPERS

EVENING FREE LANCE, daily, Hollister, M. F. Hoyle, Editor.

SAN BENITO COUNTY NEWS, semi-weekly, Hollister, M. F. Hoyle, Ed.

SAN BENITO ADVANCE, weekly, Hollister, Walter Keene, Editor.

MORNING DAILY ADVANCE, daily, Hollister, Walter Keene, Editor.

SAN JUAN MISSION NEWS, weekly, San Juan, J. C. Crome, Editor.

BANKS

Banks and Location	Capital	Year	Assets
Bank of Italy, Hollister Branch, Hollister, Cal.	\$3,000,000.00	1917	\$77,473,152.79
	5,000,000.00	1918	93,546,161.50
Deposits of Hollister Branch.....		1917	1,897,689.08
Deposits of Hollister Branch.....		1918	1,916,403.17
First National Bank, Hollister,			
C. H. Wagner, Cashier.....	100,000.00	1916	420,000.00
	100,000.00	1917	530,000.00
	100,000.00	1918	575,000.00

Hollister Savings Bank, Hollister,

C. H. Wagner, Cashier.....	50,000.00	1916	478,000.00
	50,000.00	1917	713,000.00
	50,000.00	1918	720,000.00

San Juan Bank, San Juan Bautista, R. H. Pierce, Cashier.

The San Juan Bank was opened Monday, March 10, 1919, with a capital stock of \$25,000.

SCHOOLS

AUTHORITY: W. J. Cagney, County Superintendent of Schools, Hollister;

James P. Davis, Principal High School and Junior College.

The educational facilities of San Benito County consist of a Junior College, San Benito County High School and forty elementary schools together with a Catholic School situated in Hollister.

Junior College—

The Board of Education voted to establish the Junior College on March 8, 1919. It will start with about twenty pupils on the same date as the High School, about September 15th, and James P. Davis will be Principal of both Junior College and High School. Philip Power will be the Dean of the College and will give his time mainly to College teaching.

The cost of running the school the first year will be very little, the greatest being for salaries of teachers, no new equipment being necessary. The two schools will be closely connected through their teaching forces, as the experience of older Junior Colleges has shown this to be best. Therefore, four or five of the High School teachers will give one course each in the College. This will make the Junior College a strong school without great additional expense. It will also make it possible to offer a fairly diversified course to prospective college students. Courses will be given in History, Philosophy, Economics, English, Modern Languages, Mathematics, Commercial branches, and perhaps one or two others.

County High School—

The San Benito County High School is located about a mile from the center of Hollister on a ten acre tract. The building is practically new and cost \$54,000, which includes a complete equipped laboratory. At the present time 172 pupils are enrolled and a staff of 8 trained teachers and officers. In addition to the regular high school branches, a very broad course including manual training, domestic science and various lines of commercial work is taught. The school supports a well organized and very active agricultural club and encourages athletics such as track work, baseball, football, etc., while the debating, musical and literary societies are fostered and assisted.

The class of 1918 graduated 29 regular students and 6 from the commercial department and it is worthy of note, that a large percentage of these enrolled in the State Normal Schools or in one of the Universities. The elementary schools throughout the county are now being taught by teachers, two thirds of whom were at one time students in the local high school. The County High School is supported by a tax of 15 cents per \$100, and the pupils are from every part of the county. Most of them,

with the exception of the San Juan and Tres Pinos students, live in Hollister during the school term. The students from the San Juan and Tres Pinos districts are driven in by motor cars and returned to their homes at night, being assisted to a certain extent by the school funds for such transportation.

Elementary Schools—

The school buildings of San Juan, Olympia, Tres Pinos, and Ausaymas districts are among the most modern in California. They are equipped with every convenience and are open-air structures. The others, while old, have recently been brought up to date and are sanitary, the buildings and surroundings being pleasing to a considerable degree. There are about 1200 pupils enrolled in the elementary schools of the county. These schools range in size from 5 pupils all from one family, to others where 40 pupils represent as many different homes. The Hollister Grammar School has about 400 pupils with a staff of 11 regular teachers and a \$20,000 school building.

The Trustees have plans for a \$140,000 modern school building and have voted to call a bond election immediately. Bonds have recently been voted for a modern school building in the Union district and San Justo and Fairview districts are preparing to take similar action.

The Grammar School at San Juan is next in size, with about 120 pupils and 4 teachers in a \$10,000 structure. The Tres Pinos district is the only Union District in the County with 2 teachers and is composed of the district of Tres Pinos and Sunnyside. All the others, with the exception of New Idria, Ausaymas and Pacheco, which have two teachers, are schools of but one teacher. From Tres Pinos to the southern end of the county, practically all the young lady teachers, on both sides of the range, are graduates from the San Jose Normal School. All these elementary schools are conducted from 8 to 10 months in the year, according to the location and the size. These elementary schools graduate approximately 100 children from an average attendance of 1,000, of which nearly 75 per cent enroll in the San Benito County High School.

During the past school year San Benito County received for its elementary schools \$45,000 from the State and County. The total valuation of the school property is \$86,000 for elementary schools and \$60,000 for the High School.

The Convent of the Sacred Heart is conducted by the Sisters of that Order as a day and boarding school. The buildings are spacious and are well equipped, situated in beautiful grounds, and the course offered embraces that found in the public elementary schools and some of the studies and sciences taught in the high school. The enrollment is about 207 and the graduates of this institution can go direct without examination to the San Benito County High School.

LIBRARIES

COUNTY LIBRARY—AUTHORITY, Miss Mabel Coulter, County Librarian.

The San Benito County Free Library, established by the Board of Supervisors, Feb. 4, 1918, is supported by the county and gives free ser-

vice to every resident of the county. The library began work March 1, 1918 and now contains 3500 volumes.

The County Library consists of a business office, located in the Hollister Public Library in charge of a certified librarian, and 39 branches throughout the county, 34 school and 5 community branches. Books are shipped from the county office by express and parcels post to the 39 distributing centers, giving residents of the most remote parts of the county the same library privileges as are enjoyed by residents of towns. Through the County Library and its branches, the resources of the State Library, which contains thousands of books on various professions, trades and employments, such as law, mechanics, engineering, electricity, farming, horticulture, etc., and historical works, art books and books in foreign languages, are also made available to readers throughout the county.

PUBLIC LIBRARY, W. J. Cagney, County Superintendent of Schools.

The Public Library was established May 13, 1911, and was built by a fund of \$10,000 donated by Andrew Carnegie. The selection of books was made by Judge Maurice T. Dooling and on the shelves are the best books in every line. Other libraries may have more volumes, but none a better or more careful selection. The library is supported by the city of Hollister. Up to the time of the establishment of the County Library, March 1, 1918, it served for both the city and County.

CLIMATE

AUTHORITIES: U. S. Weather Bureau, Department of Agriculture; C. N. Hawkins; Leonard H. Day, Horticultural Commissioner of San Benito County.

Winds, Fogs, and Variations—

San Benito County enjoys more variations in climate than are at first apparent and the humidity is higher than the average traveler through the county suspects. This is indicated in the moss growth on the alkaline base soils, which is very prolific. Temperature, maximum and minimum, and rainfall charts for the stations situated throughout the county are found on page 13.

The prevailing winds come from the west and north and tend to temper the heat of summer, which is never oppressive. The trades blow regularly, but not strongly, from March until September. Fogs from Monterey Bay roll over the mountains from the west and facilitate the plant growth throughout the Spring and Summer months and help the moisture conservation in the soil. Compared with other sections in the State, the Hollister, San Juan and San Benito Valleys are especially favored with climatic conditions with but slight and merely cooling winds and fogs.

Frosts—

Frosts may be expected from the middle of November until the 15th of April during a normal year. Smudging in the orchards is increasing in practice and is the only insurance some years against total loss. Farming sections in the foothills are from two weeks to a month later in the season and often experience killing frosts as late as May, especially in

northern and western exposures. There are many favored sections that do not experience frost damage.

Elevations—

The Hollister and San Juan Valleys are about 284 feet above the sea level and the former, just north of Hollister drops toward the Pajaro River. Many little orchards and the major vineyards are situated in the Gabilan Mountains at elevations over 750 feet and many of the sheltered grain and grazing ranches of the foothills are at elevations of from 400 to 500 feet.

Temperature record taken at Hollister, elevation 284 feet:

Year—		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1914	Max.	65	71	84	85	85	97	87	89	98	93	83	59
	Min.	30	31	33	38	42	42	45	46	42	38	30	28
1915	Max.	65	68	83	77	89	85	90	97	95	87	79	57
	Min.	29	32	36	39	35	42	41	45	44	37	27	22
1916	Max.	63	75	84	84	83	89	100	92	97	81	75	63
	Min.	28	30	34	36	33	41	43	45	41	33	25	26
1917	Max.	54	60	61	67	65	81	83	74	83	77	70	66
	Min.	32	38	35	41	44	46	52	79	52	47	41	38
1918	Max.	61	60	66	70	68	83	79	51	72	72	60	35
	Min.	35	39	42	43	43	52	50	51	55	49	40	32

Precipitation taken at Hollister, elevation 284 feet:

Year	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1914	8.39	2.21	.76	1.12	.29	.04				.59	.21	3.77	17.38
1915	3.60	6.11	.89	1.03	2.00			.02			.39	3.06	17.10
1916	9.51	2.35	1.19	.76	.07			.51	1.46	.45	3.58	19.91	
1917	1.39	3.89	1.95	.73	.22					.71	.78	—	
1918	.54	3.56	3.83	.32	.08			4.50	.20			—	

Year	Inches	Snow	Rainy Days	Clear	Partly Cloudy	Cloudy
1912		0	50	231	83	52
1913		0	56	211	86	68
1914		0	56	226	70	69
1915		T	67	216	57	92
1916		T	68	224	54	88

WATER FACILITIES

AUTHORITIES: William Palmtag, President of Hollister Water Company; N. C. Briggs, Jr., Secretary Hollister Water Company; Paul F. Brown, President and Manager San Benito Land & Water Company, Hollister; H. H. Whitmore, Secretary San Benito County Chamber of Commerce.

Water facilities both for domestic supply and for irrigation throughout the county are adequate for all needs and of unsurpassed purity.

Domestic Supplies—

The Hollister Water Company, incorporated in 1877, now owns what is probably one of the most costly and unfailing water systems to be found in the State in proportion to the size of the district that it supplies. Its primary source of supply is from an elaborate system of wells in the Pes-

cadero Creek in Grass Valley, southwest of Hollister. The water is conducted through a 1,400 foot tunnel, sump and settling basins, where it is freed of the minimum amount of granite in suspension which it carries. An eight mile pipe line carries the water to the concrete reservoir of 450,000 gallons capacity, at Sally Flat, whence it is run by gravity through pipes to the 550,000 gallon reservoir on top of Hollister Hill inside the town limits. The system supplies not only the city of Hollister but the suburbs as well. A head of 105 feet above the city insures a constant pressure of 45 pounds per square inch with an emergency pressure of 80 pounds, which may be increased in case of a conflagration to 250 pounds per square inch. The company owns many acres with the privilege to develop water rights in the event of future shortage and their watershed embraces some 30 square miles where the rainfall is from 25 to 30 inches per annum. Twelve inch mains with two inch and four inch distributing pipes convey the water throughout the city and adjoining territory and the pumping plant is one of the most efficient to be found in any rural community.

The water supply of Tres Pinos is obtained from springs in the hills to the east and northeast of the town, where there is situated a large reservoir from which water is piped to the residences in the town below.

San Juan Creek is tapped with a diverting dam and the water of San Juan is stored in a large reservoir south of the town, whence it is piped to the residents of the town and the neighboring districts.

Irrigation—

One of the diverting dams of the San Benito Land and Water Company is situated on the San Benito Creek about six miles above Paicines and is connected with the storage reservoir at that locality by $6\frac{1}{2}$ miles of canal. This dam, 100 feet wide and sunk 15 feet in the stream bed, is concrete with a hinged, steel flash-board system, by means of which the water pressure is lessened during times of exceptionally high water. The capacity of the canal is 250 acre feet per twenty four hours. The main storage reservoir is situated about one mile above Paicines and covers 172 acres. The water stored here is used only in times of shortage and low water in San Benito River and has been completed within the past five years. The reservoir site is a natural basin between the hills, 1 1-4 miles long and 3-8 of a mile wide, enclosed on the east side by a substantial levee, $\frac{1}{2}$ mile long. When the occasion requires it, the water is drawn out of the reservoir through a 6-foot concrete pipe line to the natural channel of the creek. The reservoir has a capacity of 5,000 acre feet and before its completion there was nearly always a shortage of water in the summer. The reservoir therefore supplies a long felt want in the community. It is filled in the winter and spring when the water would go to waste and has added at least \$5,000,000 in value to the lands under the canal since its completion. It has changed hay and grain land into orchard, berry and alfalfa land and has increased the value of the land from \$100 to \$500 and \$600 per acre by adding water facilities.

Following the creek channel the water flows to within $4\frac{1}{2}$ miles of Hollister, where another diverting dam begins the general distribution

of the water, for orchards and farms. A network of laterals places 4,000 acres under irrigation with a capacity of at least 2,000 more. The entire system, which was not completed until 1907, represents an investment of \$200,000. With increased plantings of alfalfa and fruit lands throughout the valley and bench lands, irrigation has become one of the most vital subjects and the first for which the new settler or prospective buyer evinces interest. The cost of irrigation for alfalfa or field crops is \$2.00 per acre for each application; for orchards \$2.50 for the first irrigation and \$2.00 for each subsequent irrigation. By "irrigation" is meant the usual application of from 12 to 17 inches of water.

Wells—

Pumping plants, either gasoline or electric, furnish means of irrigation in many sections where the San Benito Water Company has not yet placed laterals and also in districts where the orchardist uses both methods to put the water on his land. An artesian belt is found in the northern end of the Hollister Valley. The flow is sometimes constant, though more often pumps are installed for emergency use in time of small rise of ground water. Water is encountered here at a depth of from 70 to 100 feet, constant flow, although in many instances not of sufficient volume to irrigate. Springs of the purest water are abundant throughout the foothills and mountain sections and in addition to wells form the domestic supply and water the stock on the hill land ranches.

LIGHT AND POWER

AUTHORITY: E. J. Sherman, District Manager of the Coast Counties Gas and Electric Company, Hollister.

San Benito County is served with electric current by the Coast Counties Gas and Electric Company, as is also Santa Cruz and a part of Santa Clara county. Wires run to all the small towns and to many of the larger ranches. A gas plant located at Hollister supplies that locality and the immediate suburbs.

The Coast Counties Gas and Electric Company has a hydro-electric plant on Big Creek in the Santa Cruz Mountains, and a steam plant at Santa Cruz and Watsonville. They tie in with the Pacific Gas and Electric Company at San Jose and also at Davenport, near Santa Cruz. Also a transformer has been installed at San Juan and tie in made with the San Francisco and Sierra Power Company.

The lighting system extends as far south as Paicines, to the Santa Ana Valley on the east, and on the west and to the north to and beyond the county line of San Benito County.

The entire lighting system is by meters, operative on various schedules covering different classes of service, with a kilowatt rate for light ranging from 3 cents as a minimum to 8 cents maximum rate. As the majority of pumping plants throughout the county for irrigation are electrically operated, the Coast Counties Gas and Electric Company have a tariff for power purposes of 1 1-4 cents per kilowatt hour for large concerns to 4 cents per kilowatt hour for the small capacity pump.

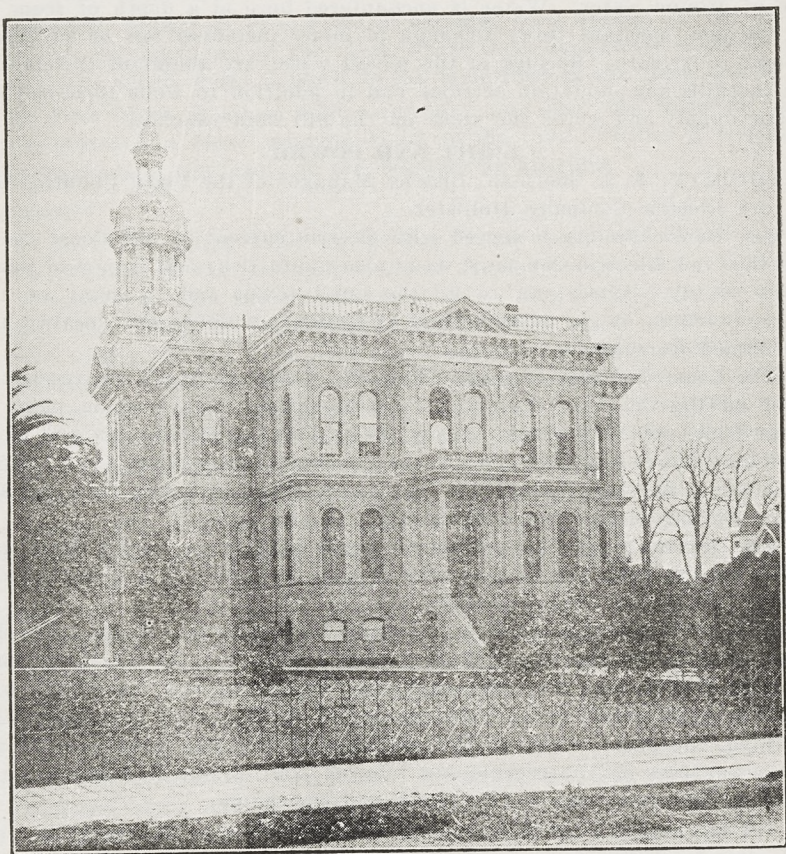
The gas rate for Hollister ranges from \$2.00 maximum charge to special rates for large consumption running as low as \$1.10 on a graduated schedule.

Complete charts covering the operative cost of electric pumping plants in relation to the number of acres covered, size of pump, etc., are available to the farmer contemplating installing such a plant, and may be had upon application to the Hollister office of the Coast Counties Gas and Electric Company.

No plant is debarred, as the company will extend its power lines to meet the demand and the approximate cost of pumping by electricity runs from \$.50 per acre to \$2.00 per acre for current per irrigation.

TELEPHONES

The Pacific Telephone and Telegraph Company has telephone connection to at least 50 per cent of the ranches throughout the county within the five mile radius of the towns, while farmer's lines bringing the outlying ranches into communication with the towns and cities. Perhaps nothing speaks more emphatically than does the presence of telephones in the rural home, of the progression and alertness to business methods. The farms throughout San Benito County show this evidence.



SAN BENITO COUNTY COURT HOUSE
Hollister, Cal.

FRUIT INDUSTRIES

APRICOTS

AUTHORITIES: Carl L. Ladd, W. L. Dunlap, W. A. Johnson, F. L. Barnhisel, orchardists; Leonard H. Day, Horticultural Commissioner of San Benito County.

Extent and Sections—

There are in San Benito County about 4,000 acres under irrigation and 433 acres not under irrigation which includes 1,054 acres bearing and 3,412 acres non-bearing apricot trees. The climatic and soil conditions of nearly every section in San Benito County are so favorable to a large production of apricots of high quality that they are becoming the principal fruit crop of San Benito County, which is now known as "The Home of the Apricot."

Climate and Soil—

For maximum returns, the apricot has three requirements: Deep soil of a good texture; warm, frostless weather during and after blossoming season, and irrigation facilities. The heavy bearing orchards through the county are mostly on deep, loamy soils, without trace of hardpan or impervious clay substrata. At least three to six feet of good soil is necessary to the tree's best growth and fruition. There are a few old orchards without irrigation on soil not of this ideal character, which are giving good returns, indicating possibilities of thinner soils.

Planting and Costs—

Before planting the land is plowed to a depth of at least eight inches at a cost of about \$4.00 per acre, cultivated and worked down with a harrow. The cost in heavier types of soil runs from \$4.00 to \$5.00 per acre, and probably less for lighter soils. Holes for the young trees are dug at least 22x24 inches. Many old orchards are planted 20x20 feet or 22x22 feet apart, with 108 and 90 trees to the acre respectively. The latter distance, or 24x24 with 76 trees to the acre, is advocated and recent plantings have followed this plan. Young stock budded at the nursery and planted in places are one year old trees on a two year old root. Either apricot, or for the heavier soils, Myrobolan root is used. Trees will average about 30 cents each. The young tree is pruned yearly when dormant, at a cost of \$4.00 per day for a thorough workman who in a day of nine hours will average about the following number of trees:

Age of Orchard	No. of Trees Per Day
1 year	550
2 years	300
3 years	175
4 years	100
5 years	65
6 years	40
7 years	35
8 years and older at least 20 to 29	

It is estimated that cultivation and harrowing cost about 65 cents per acre and the careful orchardist cultivates constantly to keep down weed growth and conserve moisture, although many encourage a rank growth of weeds in bearing orchards during the winter months and plow under in lieu of a cover crop in March and April. Five or six cultivations per year is a minimum for the young orchard, covered by about \$4.00 per year. \$7.60 should cover the cost of digging 76 holes, setting trees, filling and pruning. Initial costs would therefore be as follows:

Plowing (Minimum) per acre.....	\$ 3.00
Cultivation and harrowing, 1st year, per acre.....	6.00
Digging holes, setting trees, filling, topping, planting 24x24 feet, 76 trees per acre	7.60
76 trees at 25 cents per tree, per acre.....	19.00
First year total, not including land leveling, interest, taxes, etc. per acre	35.60

Cultivation costs may be reduced about half by intercropping with seeds, vegetables or berries. This practice, however, if not carefully done, will work much injury to young trees.

Varieties—

Blenheim, Moorpark and Hemshirk are the commercial varieties grown throughout the county. Blenheim is recommended both for canning and drying. Few Royals are found and mostly in family orchards.

Pruning—

Formerly most of the orchards were pruned by contract, the price ranging from 1 cent to 14 cents per tree, according to the size and amount of work necessary. Recently most of this work has been done by Italians and Slavonians. For costs, see "Planting and Costs" on page 17.

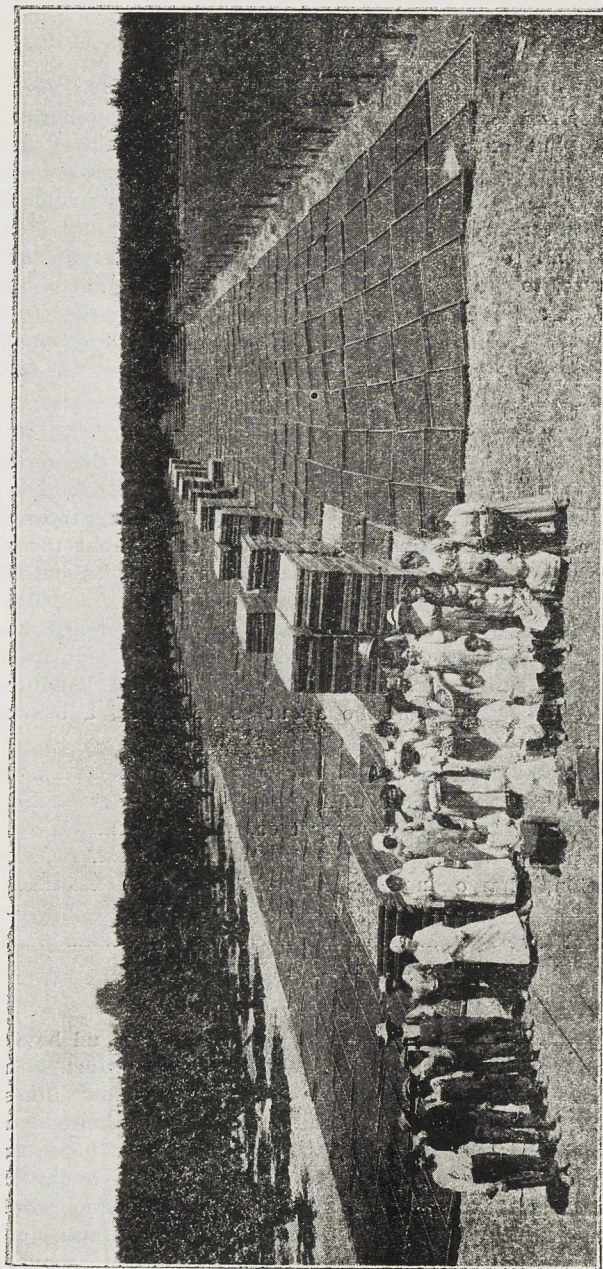
The trees are usually cut back heavily each year. Some, however, carry this to extremes, which holds the trees back very materially so that a large paying tree is not secured until the trees are seven to eight years old. Many orchardists are now adopting a much less severe cutting back of the apricot tree.

Cover Crops, Fertilization—

Cover crops are becoming more general in the bearing apricot orchards throughout the county. These are all drilled in rows between the trees, and harrowed at a cost of about 50 cents per acre for labor. Seed costs in the neighborhood of \$3.00 to \$4.00 per acre for either vetch, rye, Canadian peas, clover, melilotus or tack clover, alfalfa, or barley. Barnyard manure is used when obtainable. Soils lacking in lime are sometimes treated to $\frac{1}{2}$ ton per acre, drilled in at a cost of about 35 cents to 40 cents per acre. If crushed lime rock is used, about 1 ton to the acre is applied. This costs about \$8.00 per acre, which includes hauling and labor.

Spraying—

Spraying is seldom necessary until the trees come into bearing. Costs will vary according to the size of the tree and pest for which the operation is done, but will average 6 to 7 cents per tree for labor and for the



DRYING APRICOTS IN SAN BENITO COUNTY

spray approximately 9 cents per tree. Crude oil emulsion for scale, moss and to soften hardened bark, with occasionally lime sulphur solution are used.

Irrigation—

Many of the orchardists throughout the county give two irrigations per year, May and September, although those having orchards on heavier soils irrigate but once and get good returns. The first irrigation for orchardists using the San Benito Land and Water Company's ditch, costs \$2.50 per acre, succeeding ones \$2.00, with an equal amount for labor of putting the water on the orchard. Irrigation from individual pumping plants, electrically operated, costs about \$3.00 for current and \$1.25 for labor, per acre, to put water over the orchard. Gasoline pumping plants may operate at a cost of \$1.75 per acre to \$2.00 per acre. To deliver the water and the cost of handling would be the same. Checking the orchard, four trees to a check, costs about \$1.00 per acre. See "Water and Irrigation on page 14.

Cultivation—

A yearly plowing of eight to ten inches given in the spring turns in the cover crop, when one is grown, and costs about \$4.00 per acre. This is followed immediately by harrowing, many preferring the spring tooth harrow. From 5 to 8 cultivations are given throughout the year, which includes working the land with the disc, harrow, etc., (about 65 cents per acre for each operation), and slabbing just before the maturity of the crop at approximately 60 cents per acre. It is universally asserted that extra cultivations are profitable. Trees respond by bountiful crops and harvesting is expedited when the orchard is in good condition. Yearly cultural costs would therefore be about as following a bearing orchard of 76 trees to the acre:

Pruning, average 16 cents per tree, per acre.....	\$12.16
Cover crop and labor of drilling, minimum per acre.....	4.30
* Spraying, average 15½ cents per tree, per acre.....	11.78
2 irrigations and labor, approximate.....	9.00
Cultivation, (harrowing, plowing and slabbing).....	8.00

Total average\$45.24

* Spraying not necessary every year.

Harvesting and Marketing—

The crop begins to ripen the second week in July and harvesting lasts for about six weeks. The apricot crop is one that must be handled expeditiously and the orchard is gone over three or four times. Picking is done from a ladder by hand, though some shake onto canvas sheets. It is estimated that the cots cost about \$5.50 to \$7.50 per green ton to pick. Pickers average about 35 forty-pound boxes a day and receive \$4.00 per day. Hauling from the orchard to the dryer would approximate 50 cents and cutters or pitters who place the fruit on the drying trays as they cut it, receive 12 to 15 cents per box or about \$5.20 per green ton. The drying trays are 3x8 feet and cost 50 to 60 cents each made up; 40 pound lug boxes 15 cents each. Twenty-one trays load on

each car which operates on a temporary track, rolling from the cutting shed to the air-tight sulphuring room where five pounds of sulphur are burned under each car for 3 or 4 hours, before traveling to the drying yard, where the trays are spread in the sun for curing from 3 to 5 days before stacking. In the event of rain the trays are stacked and roofed until the sunshine warrants spreading again in the yard. The 'cots dry away 5 to 1 in weight. Barley sacks holding about 90 pounds of dried 'cots are furnished by the packing houses to the grower. The maximum of efficiency in handling and the elimination of wasted motion, is a matter of great pride and the source of much saving among the large orchardists throughout the county. It is the consensus of opinion that the cost of curing and sacking apricots averages about \$45 per dried ton.

Dried Fruits—

The dried fruit industry in San Benito County has more than trebled during the past five years. Increased plantings of apricots insures a large increase above the usual crop of 900 tons of apricots, dry per year, during the past six years. The apricot shipments of 1918 were valued at \$450,000, and comprised about 1500 tons of green apricots for the cannery and 1300 tons of dried apricots, which sold at an average price of 15 cents per pound, dry.

Yield and Selling Price—

The average yield throughout the county is 7.67 tons per acre of green fruit. There are some old orchards yielding under most intensive cultural methods as high as 15 tons per acre in favorable seasons. Hill land orchards without irrigation, of course, bear less profusely, but the fruit is higher in sugar content. The trees come into full bearing the 8th year, though from the 5th year on commercial returns are realized on the apricot. The apricot, owing to its early blooming is subject to frost damage and in many sections this is being eliminated by smudging while other sections have thus far been exempt from loss. The price to the grower during the past five years has average $12\frac{1}{2}$ cents per pound. This embraces two prolific years and one of extremely low market prices. The price for canning fruit averaged \$47.50 for the past three years, with the pits kept by the cannery.

Diseases, Pests and Hindrances—

The brown apricot and black scale necessitates spraying at least every two or three years. Shothole fungus does very little damage here and it has not been necessary to spray for it. Nursery stock is thoroughly inspected and the danger from root rot and crown gall minimized. Peach root borers sometimes necessitates the clearing away the soil from around the tree to a depth of six inches and digging out the borer. Painting with asphalt and paraffine is used by some to prevent the entrance of the borers.

The brown rot fungus attacks the blossoms, spurs and ripening fruit when prolonged wet weather occurs during the blossoming period or during the ripening season. Two seasons within recent years this has severely reduced the crop in a few orchards. Spraying two or three times with lime-sulphur solution during the blossoming period will check the

ravages of this disease according to advice from the State College of Agriculture. The College of Agriculture also advises the removal of all dried fruits (Mummies) left hanging in the trees after harvest and the cutting off of as many of the dead spurs as is practicable during the pruning operations. These sprayings and preventative measures should be carried out annually in orchards that have this disease severely.

Smudging—

The preferred size pot is the one gallon pot holding about 3-4 of a gallon. These cost 29 cents each. The two gallon pot costs 39 cents each. When obtainable, gallon lard pails will answer the purpose very well and cost but 12 cents each. What is known as "28 degree gravity smudge oil," \$4.50 per barrel, warehouse, Hollister, is the most extensively used as it does not leave a layer of asphalt in the bottom of the pot after ignition and burns from 3 to 4 hours. The general method is a pot to each tree with a double row on the north and west side of the orchard in the more exposed sections. The coldest time generally comes between 3 and 4 a. m., and 31 degrees is the signal for lighting. Two men can handle 30 acres or one man about 10. The gallon pots cost three cents each to fill and one man's labor for $\frac{1}{2}$ a day to cover 10 acres with the oil wagon, which is so constructed that it may be driven through the rows. A barrel with a spigot and a sled is generally used by the small grower.

Many of the large growers install an electrically operated thermometer situated in the coldest part of the orchard, which rings a gong in the house when the degree of danger is reached. The cost of this equipment runs about \$27.00, not including the wire or labor of installation.

By-Products—

About 20 tons of apricots yield about 1 ton of pits which average about \$32 per ton sacked, freight shed. When the apricots are sent to the cannery the pits are kept by that concern without extra remuneration to the grower. The pits are shipped to England for medicinal purposes and for fine soap manufacture.

Price of Land—

When obtainable, unimproved land suitable for apricot orchards brings from \$150 to \$350 per acre. Bearing orchards from \$800 to \$1250, and those under five years of age from \$600 to \$800 per acre.

Profits—

From the figures of seven growers it is estimated that \$200 per acre net profit may be expected from apricots in full bearing in a first class orchard. Although profits in excess of this figure are not uncommon.

PRUNES

AUTHORITIES: Carl L. Ladd, W. E. Wilson, Herman Schiultz, Arch. S. Wright, and J. G. Hamilton, orchardists; Leonard H. Day, Horticultural Commissioner of San Benito County, Hollister.

Extent and Sections—

Prunes rank with apricots throughout the county in commercial importance, although it is asserted by many horticulturists that the future

for the apricot industry is brighter than it is for the prune. San Benito County prunes run small, from too prolific bearing, although owing to extensive cultivation and careful pruning the standard of size has been materially increased during the past five years. Plantings of prune orchards have steadily been on the increase for the past few years and there are now 3014 acres of non-bearing and 1433 acres of bearing trees in the county, with approximately 4,400 acres under irrigation, all ages. They are a sure crop and the apricot and the market is unlimited.

Soil Requirements—

The prune thrives under a great variety of soil conditions when budded or grafted to the proper root for the soil on which planted. We have old bearing orchards on heavy adobes, sedimentary loams and silty sands. As with all stone fruits the soil water must not be too close to the surface.

Planting and Cultivation—

Young trees average about 30 cents per tree, and are a one year old tree on a two years old root. Myrobolan root is preferred by the majority of the orchardists for planting on the heavier soils with the almond root a favorite on loamy soils, based on the past experience of many old orchards planted on that root; the peach root probably makes a short-lived tree. The preparation of the ground for planting is the same as for the apricot and the costs run accordingly. While many of the old orchards are planted 20x20 feet, or 108 trees to the acre, better fruit, easier cultivation and harvesting is obtained when the planting is but 24x24 feet, or 76 trees to the acre. Recent plantings have been spaced 22x22 and 24x24. The young orchard is topped back the first year about 18 inches from the ground and thereafter pruning consists in thinning out inside and encouraging laterals to grow out to make a spreading habit. No irrigation is given the young tree after setting out unless it is a particularly dry season and good soil moisture conservation is impossible. Some orchardists have obtained good results by one irrigation at the time of setting out and none until time of bearing.

Varieties—

The French, Sugar and Imperial prunes are the commercial varieties grown, with a few Burbank and Silver.

Irrigation and Fertilization—

Two irrigations, May and October, are given the majority of the bearing orchards, although many irrigate in the spring only. These cost under the ditch irrigation \$4.50 per year for water and an equal amount for labor and about \$5.00 per acre per year when twice irrigated from pumping plants. Winter cover crops are grown to keep up the fertility of the soil. Canadian peas and oats sown together have proved to be very satisfactory cover crops. Rye and barley may take the place of oats. About 60 pounds of Canadian peas at 6 cents per pound are drilled in, per acre. The labor cost of planting will average about 50 cents per acre, making a total cost of about \$4.10 per acre. The labor of plowing under in the spring is not taken into consideration, as this is one of the necessary cultural acts in any orchard.

Pruning and Spraying—

The method of thinning by pruning and shortening the fruit spurs in the fall to produce larger fruit, is becoming more popular each year. Formerly but little pruning was done, except to cut out dead wood and interfering branches. Pruning will increase in cost proportionately with the size of the tree, but average 6 to 8 cents per tree. Spraying for brown apricot and black scale and mossy growths is practiced at least every other year, at a cost of about \$10 per acre, by many orchardists.

Pests and Hindrances—

Brown apricot and black scale and peach root borer have occasioned some loss in the prune orchards. Red spider is present but only occasionally does injury. The scale is treated to a crude oil emulsion spray and the borer is dug out. Where formerly oaks were grubbed out, the oak root rot disease has manifested itself in a few cases. Owing to the late and profuse blossoming, smudging on prunes has not yet been found necessary.

Harvesting and Marketing—

By the time the apricot crop is harvested and out of the way, about the middle of August, the prunes are ready to harvest. They are allowed to become dead ripe and drop to the ground, from which they are harvested. The orchard is gone over five to seven times and finally, the tree is shaken to remove the fruit which does not fall. \$5.50 per ton is the average cost of harvesting as reported by six growers. In addition to picking, a team and two horses must be employed to haul the crop from the orchard to the dryer, and three men are needed at the dipping vat, to submerge the fruit and roll on the trays prior to laying in the drying yard. A crew of this size can handle from 10 to 12 tons of fruit daily. Many growers estimate the cost at \$7.50 per ton of green fruit, from the time the fruit falls from the tree until it is put into 90 pounds sacks ready for shipment. To facilitate drying the prunes are run through a boiling solution, containing 4 pounds of lye to 150 gallons of water. They are then spread on trays and placed in the sun to dry. The curing takes place in from 12 to 14 days and the careful drier rolls his prunes on the trays every week to equalize the heat on the fruit. Commercial driers handle the crop of the small growers who do not wish to install dipping apparatus for \$5.50 per ton. The season lasts from 5 to 7 weeks and affords employment to many, among them school children and city people who otherwise would not be able to afford a vacation in the country. The shrinkage averages about 2½ to 1 for prunes in this section.

The California Prune and Apricot Growers' Inc., handle the bulk of the crop although a slender minority still cling to the method of individual marketing.

Yield and Selling Price—

Throughout the county and including some of the orchards whose yield has been phenomenal as well as some of those whose yield has been poor, the production for San Benito County averages 7 tons per acre of green prunes. The crop is sold on a size basis 80 being the standard. San

Benito County prunes average 70, with strong inclination recently to larger sizes on account of systematic pruning. A ten year average price to the grower would be under 3½ cents per pound, while the past five years average is 5 cents per pound.

Heretofore the crop has moved through the San Jose and San Francisco packing houses, but since the establishment of the packing house in the Hollister Valley the prunes are now packed and marketed direct to the east and to Europe and other foreign markets under a San Benito brand or sign.

Price of Land—

One of the most important things to bear in mind in the purchase of land for fruit orchards of any kind, is that the soil must be well drained, free from excessive alkali and of good texture and quality. Such land when in the close proximity of towns is naturally held higher, owing to the decreased cost of marketing and transportation to the ranch of provisions, equipment, lumber, etc. Such land in the vicinity of either Hollister, Tres Pinos or San Juan is held at \$200 to \$350 per acre and bearing orchards bring \$650 to \$1,000 per acre.

Profits—

It is a favorite axiom of the orchardist that the man who has not all his eggs in one basket, but half apricots and half prunes is safe from seasonal failure. Many estimate a ten per cent profit on their investment but it seems safe to state that \$200 net profit per year per acre, should be made from a prune orchard provided adequate care and attention were given.

PEACHES

AUTHORITIES: F. L. Barnhisel, M. F. Rodriguez, orchardists; Leonard H. Day, Horticultural Commissioner of San Benito County.

Extent and Sections—

The bulk of the peach crop is shipped to the cannery, only 130 acres of the 506 acres in peach trees being devoted to drying. In recent years plantings to the amount of only 243 acres for canning and 73 acres for drying have been made, although this crop is steadily increasing in commercial importance and the soil and climatic conditions are intensely favorable to the production of unsurpassed flavor and quality. Muirs, dried, are highly praised by the California Dried Peach Association.

Climate and Soil—

A limited amount of warm, sandy loam along the streams is found. This is ideal peach land. However, peaches do remarkably well on heavier lands in this district.

Planting and Costs—

The majority of the plantings are on a two year old peach root, and young stock cost 20 cents per tree. The land is thoroughly plowed and worked down to maintain a good soil mulch prior to planting and constant cultivation in the young orchard more than repays the grower when the trees come into bearing. The holes are dug 18x24 inches and the trees planted 90 to the acre, or 22x22 feet apart. The cost of planting an acre of peach trees including plowing, cultivation, stock and setting out,

(see planting and cultivation), would then be about \$33.50 per acre.

Varieties—

Muir for drying and Tuscan, Phillips and Henrietta for canning are the chief plantings.

Pruning and Fertilization—

Young trees are cut back regularly every year until after the third year, when under normal conditions, the tree will bear enough to pay cultivation costs. Pruning for the first three years will average about \$3.00 per acre, and each year after that time when it is necessary to keep the old wood clipped out, not less than 10 cents per tree or \$9.00 per acre. Thinning depends upon the crop but some years generous bearing orchards require an additional expense of \$5 to \$25 per acre for this attention. Cover crops are often grown in old orchards, Canadian peas and other leguminous plants are used. About 60 pounds of seed are necessary for this cover crop per acre, which cost $4\frac{1}{2}$ cents per pound, and about 40 cents per acre for planting.

Cultivation and Irrigation—

Intensive cultivation is necessary with peaches to obtain the desired production, and six to ten operations each year at a cost of about 50 cents per acre, per operation, give good results. No other irrigation is given until the orchard comes into bearing when two irrigations are given yearly at a cost of about \$5.00 per acre for irrigation. These come in the spring and fall about the same time the fruit is ready to pick. On level land it is sometimes possible to irrigate 20 trees in one check, although the majority use the 4-tree check method. Irrigation, plowing and cultivation cost about \$12 per acre per year.

Spraying, Diseases and Pests—

Peach twig borers and peach leaf curl are the only things to be sprayed for. This should be practiced at least once a year with lime and sulphur in the spring just before the buds begin to open at cost of about \$15 per acre including labor. Crown gall is not present in the orchards throughout the county to an alarming extent and scale insects seldom give trouble. Peach root borers attack the root and have to be dug out at a cost of about \$4.00 per acre per operation and the orchards must be gone over twice.

Yield, Harvesting and Marketing—

The fruit for canning and green shipment begins to move about the first of August. For drying, peaches should be dead ripe while those for green shipment and the cannery must be firm. The fruit is picked into lug boxes holding forty pounds at a cost of about \$3.00 per ton. Canning peaches produce an average, throughout the county, of about 8 tons to the acre; Muirs average 7 tons to the acre. Cutters receive 10 cents per lug box for splitting the fruit and placing it on trays, while pickers get \$2.50 per ton. Pits are sold for fuel at about \$5.00 per ton. Dried peaches are shipped in 75 to 80 pound sacks which are furnished by the packing houses.

Selling Price—

The prices received for canning peaches have run from \$25 to \$27.50

per ton for the past ten years. For many years the market averaged 5 cents per pound for drying peaches but due to the efforts of the Association for the Peach Growers throughout the state, the past two years it has been 6 cents, which is the lowest figure at which the crop may be disposed of and still pay a legitimate profit.

Price of Land—

Like all land throughout the county suitable for deciduous fruits peach land is valued at from \$200 to \$350 unimproved and with bearing orchards when obtainable, \$750 to \$900 per acre.

CHERRIES

AUTHORITIES: Antone Bisceglia, orchardist; Leonard H. Day, Horticultural Commissioner of San Benito County, Hollister.

Extent and Sections—

There are about 120 acres in San Benito County planted to cherries, 80 acres of which are now bearing and about 40 of which are new plantings. There are sections well adapted to the raising of this crop and it is quite possible that the increased plantings will indicate the growth of interest throughout the county.

Soil and Climate—

Like all deciduous fruits, the cherry should have a deep well drained soil, in order to produce maximum yields and the acreage in this section of the State, at present is planted on deep alluvial loam. This fruit needs plenty of water both in summer and winter and blooms late enough in San Benito County to avoid the more severe frosts.

Planting and Costs—

Some of the older orchards are set 22x22 feet or 90 trees to the acre, but 24x24 feet is recommended and it is the accepted standard with 76 trees to the acre. Alternate rows of two or more varieties should be planted in order that pollination takes place. Where this has not been done it has been found that the orchards are irregular in bearing and disappointing in their yields.

The cost of the young stock is about 35 cents per tree. The holes are dug 22x24 inches. Costs of planting and cultivation are the same as other fruits, (see "Apricots, Planting and Cultivation").

Varieties—

Royal Ann for canning, Bing and Black Tartarians for green shipment are the most popular varieties and, where grown commercially, it is found that two of these varieties, if not three, should be planted in one orchard.

Pruning and Irrigation—

At least two irrigations during a year of normal rainfall, in checks where four trees are watered in each, are given. Plowing properly done to a depth of at least ten inches, and checking would average about \$4.40 per acre, and individual, electrically operated pumping plants irrigation averages about \$4.25 per acre per irrigation. On planting the tree should be cut about knee high. Pruning for the first two or three years consists in training the tree to spread on laterals and heading the centers back; after coming into bearing cutting out the broken or interfering

limbs. \$1.00 per acre would cover this for the first several years of bearing.

Cover Crops and Fertilization—

Like other fruits, cherries will undoubtedly benefit from the growth of cover crops, although this has not been general practice in this section. The rank growth of natural weeds has often been plowed under after much encouragement for their growth. For cover crops and their approximate costs see "Prunes, Fertilization and Irrigation," on Page 23.

Cultivation and Spraying—

Intensive cultivation is necessary during the spring and summer months to conserve the moisture. Deep plowing is essential with harrowing immediately after irrigation, discing and cross discing to attain the maximum results. At least five cultivations are given during the season.

Spraying for slugs when the fruit is forming and very small is necessary. Arsenate of lead is used at a cost of about \$2.25 per acre operation, allowing three gallons per tree.

The Tartarians in one of the large commercial orchards of the county produced for canning the third year. The costs of cultivation up to this time were born by intercropping with tomatoes. This is a practice which is recommended provided proper precautions are taken to maintain the moisture supply for the tree.

Harvesting and Marketing—

Black Tartarians ripen first, beginning in May or the first part of June, with Royal Anns coming in last, and considering all varieties, the season lasts for about 35 days. Pickers receive \$4.00 per day for picking into pails which in turn are emptied into 50 pound lug boxes when the canning varieties go to San Jose canneries and those intended for green shipment are packed in 10 pound boxes, the chief market for which is Los Angeles. Some employ pickers on a pound basis, but this is not customary. Some of the cherries found throughout the Hollister section have been of such unsurpassed size and quality that they were sold to the manufacturers of Maraschino cherries, who come into the orchards with their solution tanks and process the cherries as they are picked and sorted from the trees.

The average production is at least 200 pounds of fruit per tree and it is estimated the grower pays 1 cent per pound from the tree to the shipping crate, or 5 cents per pound in 30 pounds crates, including labor, boxes, picking and packing fruit. Disposal of the entire crop on the tree is not unusual. During the past five years the cherry crop has brought about 5½ cents per pound to the grower, net on the tree for green shipment and never below 6 cents per pound for canning cherries. Royal Ann should net at least 1 cent more per pound than other varieties to the grower. A goodly proportion of the black varieties are shipped green and green fruit buyers and the canneries are the only means of marketing the crops, as there is no association marketing facilities, as with other important fruit crops throughout California.

Diseases, Pests and Hindrances—

Birds are the source of much loss and many of the orchardists em-

ploy a man to shoot these pests during the ripening season. Slugs are discussed under "Cultivation and Spraying" on page 28.

Price of Land and Profits—

Unimproved land suitable for cherries \$250 to \$350 per acre. Bearing orchards \$1,000 per acre up. A bearing cherry orchard should net the careful grower from \$400 to \$500 per acre.

PEARS

AUTHORITIES: Edward T. Stone, Romanzo Elliott, orchardists; Leonard H. Day, Horticultural Commissioner of San Benito County, Hollister.

Extent and Sections—

Throughout San Benito County there are about 960 acres planted to pears, of which 197 acres are in bearing and 763 acres are non-bearing. Much available land suitable for pear growing is found throughout the county, especially in the San Felipe district, where the clay loam is especially adapted to pears. The pear is thought by many horticulturists to have a very large future in the county.

Soil and Climate—

While the heaviest bearing orchards in the county are on sedimentary land of light character, pears will tolerate very heavy soil and high water table if the drainage is good. Blossoming time comes in March and the first part of April and the late frosts sometimes nip the buds before the fruit begins to set, although this danger is not grave. The warm summer days tempered with the ocean breeze and fogs from Monterey Bay produce a pear of unsurpassed quality and appearance, which is an extremely good shipper.

Planting and Production—

Many of the old orchards now bearing throughout the county are set 20x20 feet, or 108 trees to the acre but plantings of 22 or 24 feet with 90 or 76 trees to the acre is the advocated mode of the recent orchards. Nursery stock budded has averaged 27½ cents per tree for the past three years and the majority of the recent plantings are grafted on a two year old Japanese root, which is resistant to blight. The usual plowing, discing, harrowing and cultivation is given at prices approximating those for other fruits as per "Apricots" on page 17.

Varieties—

The older commercial acreages are mostly Bartlett, a few acres of Winter Bartlett and Burre Hardy, Winter Nelis and Clarigeau, with small sprinkling of Keefer in family orchards. The first named are shipped to the cannery and the others are chiefly for fresh shipment of which there is no very great amount, although some acreage will come into bearing within the next two or three years. They produce commercial crops about the 10th year and are extremely long lived.

Pruning and Irrigation—

The Bartlett is a semi-dwarf tree never growing very large and in the old orchards where the plantings are 20x20 feet apart it is quite necessary to top back the trees. It has a tendency to grow up straight and every year a light and careful pruning is necessary, although no two orchards can be treated the same. For the first five years this will cost

about 4 to 5 cents per tree, increasing to 10 to 12 cents per tree after that period. The trees are cut off knee high at the time of planting, the new growth is thinned out and the leaders cut back half way each year for a few years, and laterals encouraged for giving the tree a spreading habit.

From two to three irrigations are given the bearing orchards each year, at an approximate cost of about \$3.00 per acre per irrigation. Many orchardists only give two, March and July, to make the fruit size up about three weeks before picking time. This especially applies when the planting are on heavy land.

Fertilization and Cultivation—

Winter cover crops are grown in bearing orchards and plowed under in the spring. Intercropping with tomatoes, berries or corn prior to the time of the orchard coming into bearing has not been practiced extensively, although advocated by some to eliminate the cultural cost of the first seven or eight years. However, extreme care must be exercised to avoid robbing the trees of their needed moisture.

Thorough cultivation as for other fruits is strongly recommended as being the only means of attaining maximum yields.

Spraying Hindrances, Pests and Diseases—

Pears require much more spraying than other fruits in San Benito County. Blight thus far has not been one of the diseases which orchardists have had to combat but scab makes spraying at a cost of about \$7.57½ per acre per application necessary. Two sprayings of Bordeaux, 10 days apart, are applied when the buds are opening before the blossom petals expand. It is necessary again after the petals fall about the first week in April. At this time a combination of Bordeaux with arsenate of lead is used in order to kill the coddling moth worm. This is followed in three weeks with arsenate of lead and again the last week in July for later broods of codling moth worms. This costs about \$2.50 per acre per application. Crown gall has not proved a serious menace, although it is present in some orchards. This is an increased cost over past years owing to the extremely high price of blue stone and does not include labor taxes, depreciation of the spraying outfit or work of the team. Power sprays are used which cost from \$250 to \$300.

Harvesting, Marketing, Yield and Selling Prices—

From the middle of August until the latter part of September the pears for the cannery and a small amount for green shipment are moving. They are a crop which must be handled carefully and fast, for the season is a short one. Canneries sometimes contract for the entire crop on long term contracts, usually ten years, at \$35 per ton, although many growers market their crops independently at the season's quotations which during the past four years have averaged \$43.12½ per green ton. When this method is employed growers estimate \$5.00 per green ton as the cost of picking, grading, packing into 40 pound lug boxes and hauling to Hollister or the nearest shipping point. Cannerymen take pears graded by ring measure free from blemish. 2 to 2½ inch ring measure being No. 2 and 2½ inch up No. 1, which commands a market price of 1 cent per pound

better than the No. 2's. Pickers and sorters work by hand and a good fast picker can account for one ton per day for which he is paid \$4.00. Grading is done by women paid \$2.50 per day who can do about 1½ tons per day. Eight graders are generally allowed to each 12 pickers.

The orchard is picked about two thirds the first time and in another week or ten days, depending upon the warmth and condition, is gone over again. The average yield throughout the county is about 8 green tons per acre, although in orchards where intensive cultivation and spraying is practiced this average increases to 11 tons per acre per year.

Lug boxes are furnished by the canneries sometimes, and a rental of 1 cent each is usually charged.

Shipping pears have not been so profitable as the Bartlett and it is generally the custom to contract the crop, the buyer sending his pickers into the orchard and the fruit is packed and graded as picked from the tree, the orchardist doing the hauling to the nearest shipping point. The average is about ten tons per acre and the average price for the past four years \$40.70 per green ton. Price of No. 2 pears is half that of the first quality.

Profits—

Under normal yield a pear orchard should bear at least half net profit and \$100 per acre is a very conservative figure for this.

Price of Land—

Pear growers who have made big profits during the past few years, put \$450 per acre for unimproved land suited for pear growing as a low figure although much pear land is obtainable at \$200 to \$300 per acre; \$1,000 per acre for bearing orchards if such are procurable, is the average price.

APPLES QUINCE

AUTHORITIES: Everett E. Nutting, Earnest Gleason, orchardists, San Juan Valley; Leonard H. Day, Horticultural Commissioner of San Benito County, Hollister.

Extent and Sections—

Though apples do exceptionally well in San Benito County and give as large financial returns as they do in other sections, yet other fruits do so well that apples have not been planted extensively. About 150 acres of bearing and 75 of non-bearing age, all planted in San Juan Valley constitute the extent of the apple industry here.

There is plenty of good land available for planting to this fruit throughout the county. Trees in home yards under various soil conditions and at various altitudes demonstrate the possibilities of apple culture.

The varieties grown commercially are Newton Pippins, Bellefleur, Red Winter Pearmain and White Winter Pearmain. In home yards may be found many of the other varieties producing handsome fruits.

The pests to contend with are the same as the other sections of the Pacific Coast, namely: Coddling Moth, Wooly Aphis and Powdery mildew.

The quince is not grown commercially in San Benito County. The few trees planted in home yards do well and bear large handsome fruit.

BLACK AND LOGAN BERRIES

AUTHORITIES: Chas. Sans, Hollister; John Hain, Jr., Cook, Cal.

Extent and Sections, Varieties—

Black, Logan and Mammoth berries are grown in many family gardens, not only throughout the valley districts of San Benito County, but also in many small mountain valleys with distinct success. The Himalaya blackberry seems especially to thrive and bear large crops of delicious fruit high in sugar content, both in the mountain and valley regions. There are, however, no commercial bearing patches of large acreage. 1916 saw the first shipment out of Bear Valley and 150 cases would cover the output from the Hollister and San Juan valleys per season.

Cultivation and Production—

The berry patch must receive much care and attention in the matter of weeding, cultivation and the maintenance of a good soil mulch. Irrigations vary according to the soil and climate conditions, but at least four are customary. Pruning is another important item of expense and the plant is generally pruned after harvest and again in the spring, leaving only four canes to each crown. The majority of growers train on wire trellis or tie to stakes. Cost per acre for cultivation and staking are unobtainable as the average grower raises only a few rows for his family supply.

Harvesting and Yield—

The Himalaya begins to ripen about the first week in July and the season usually lasts until September, with an average yield of about 200 chests per acre for the season. The Mammoth ripen earlier, in June, and the picking season is shorter. It is estimated that it costs about 1 cent per tray of six small baskets, to pick and pack either berry.

Pests and Hindrances—

Most of the Black and Loganberry vines throughout the valley sections of San Benito County are only of a few years productivity. The canes are attacked by a tiny, white borer, which hollows out the inside of the canes and devitalizes the plant to such an extent that a crop is not forthcoming. A species of fungus also effects the leaves and stems with orange brown spots closely resembling sunburn. No control measures, other than digging out and burning the plant when it has ceased to bear, have been employed. Bordeaux spray might be applied to advantage with little cost in proportion to the good accomplished. Old canes should be pruned out as soon as fruiting has ceased in the fall.

STRAWBERRIES

AUTHORITIES: Chas. Sans, Hollister; Frank Moriyas, San Juan Valley.

Extent and Sections—

There are in the San Juan Valley and a few especially favored bench land sections in the Hollister valley, about 150 acres planted to strawberries. The industry in this county is especially notable, inasmuch as the crop comes on the market at least two weeks later than other sections of the State, and the last crop of the three which are enjoyed here, commands the high prices of exclusive shipment. Nearly all the land in the San Juan Valley is eminently suitable for the production of most excellent strawberries.

Climate and Soil—

Strawberries for profitable production require a moderate, cool climate and a rich and well aerated soil, preferably a black sandy loam.

Cost of Production and Culture—

Great care must be exercised in properly leveling the land before planting and even on the flat floor of the valleys; \$20 to \$25 per acre must be expended in this manner. Prior to planting the land must be carefully and thoroughly plowed, harrowed, disced and worked down to a finely pulverized condition at the cost of about \$6.00 per acre. The planting generally takes place in September. The plants are placed in double rows about 2 feet apart with a double furrow between for use as irrigation ditch and pathway for the picker and cultivator. Most of the commercial acreages run from 10,000 to 15,000 plants per acre, although the few patches of the larger varieties than the Banner, have but 8,000 plants per acre. All setting out is by hand at a cost of approximately \$25 per acre. Constant cultivation is practiced and the patch is kept free from weeds and as far as possible from pests, such as cutworms, aphids, etc. This is all hand labor and in the commercial patches the help is Japanese or Chinese.

Varieties—

The Banner is the principal variety grown for commercial shipments. This is an extremely sweet, large and attractive dark red berry, enjoying a large market demand and a good shipper to near markets, although too soft for long shipments. The Oregon Marshall, Klondyke, Malinda and others are raised in small gardens. The price of plants varies according to the market demand and the variety desired, but average about \$9 per thousand.

Irrigation and Cultivation—

It is very essential that the soil moisture be maintained, not only during the growing and ripening season, but throughout the entire year in the strawberry patches. From May to October irrigation should be given about every week or ten days apart at the furthest. This costs \$25.00 to \$30.00 per annum per acre and is exclusively from pumping plants in the San Juan Valley, as this section does not come under the gravity system which supplies Hollister valley and vicinity. Many patches are provided with an elaborate system of flumes which deliver the water to ditches between rows. Weeding, suckering, hoeing and general cultivation averages about \$10.75 per acre per year.

Fertilization—

The patches throughout San Benito County require less fertilization than is necessary in many other parts of the State, but it is practiced yearly at a cost of about \$5.00 to \$7.00 per acre, generally in the spring before the rains commence. Commercial fertilizers are most widely used for this purpose, either guano, barnyard manure or poultry house scrapings, when obtainable in sufficient quantities to meet the demands of the berry growers.

Pests, Hindrances and Diseases—

The strawberry crown borer, a small white worm which eats into the

stalk of the strawberry plant, aphids, especially during the warmest weather, and cutworm are the chief pests. Cutworms call for hand labor for eradication. Lack of vitality in plants which have borne too heavily and for a too protracted period each year, is supposed to be the main cause for the longevity of the patch in San Benito county being only two or three years—four at the most. The plants come into full bearing the second year after planting. A small crop is realized from the first year's picking.

Harvesting and Marketing—

The berries begin to ripen about the middle of April and by the end of June the first crop is about harvested. The second crop is usually lighter than the first and lasts about three to four weeks. The third crop is uncertain in quality and the later it is obtained, the more fancy the prices, as the market thins. The bulk of the crop is packed in small baskets, six of which make one drawer, 20 drawers to each chest. Small baskets cost \$1.35 to \$1.40 per M. The crates cost from \$2 to \$2.35 each. About forty per acre are necessary to keep the crop moving, especially if commission merchants are not prompt in returning the empties. The return freight on the empty crates from San Francisco averages 2½ cents per crate to the San Juan Valley and proportionately more to the Hollister section. In some sections of the State the crates are owned and furnished by the commission merchants. It is estimated that to pick, pack and haul an average of three miles, costs about \$75 per acre in this section. The San Jose cannery takes the strawberries which are too green for profitable packing or when the crop is over abundant. But these must be of firm texture. Very few of these, however, go for this purpose as the larger part of the crop is much in demand for its delicious flavor and splendid appearance.

Yield and Profits—

Banner berries produce from 200 to 300 chests per acre, much depending upon the season. Oregon Marshall, which do well in this county for a fancy market, yield from 150 to 250 crates per acre from which a net profit of \$150 to \$200 may be forthcoming.

Price of Land—

Rented land suitable for strawberry production may be had on lease of \$25 to \$30 per acre per annum and sells for from \$250 to \$500 per acre.

GRAPES

AUTHORITIES: Wm. Palmtag, President of First National Bank; Emil Corotto, John Dickinson, San Benito Vineyards Company, Hollister.

Extent and Sections—

There are in San Benito County between 650 and 700 acres in grapes, mostly wine varieties. Most of these, with the exception of the El Gavilan Vineyard are very old, although vines which have ceased to produce the average tonnage have been removed and new stock substituted. Almost without exception these vineyards are planted on steep hillside and the two largest vineyards, the San Benito and the El Gavilan, are situated 800 to 1,000 feet above the sea level in the Gabilan Mountains. The lat-

ter is just about coming into full bearing. Although this is one of the oldest and most firmly established industries of San Benito County, so strong is the belief of even the growers that eventually the State will prohibit the making or exporting of wine, that they are increasing plantings of orchard trees in unit acreage against the time which they believe will inevitably render a vineyard non-profitable.

Climate and Soil—

The hillsides produce the finest quality of grapes, high in sugar content. The soil of this location is generally a gravelly or sandy loam underlaid with a clay sub-soil. Climatic conditions in San Benito County favor the grape and the product of this section is very high in sugar.

Cost of Production—

Most of the acreage now planted to grapes in this county was cleared and prepared for planting in the '80's and since that time the original cost of \$30 to \$50 an acre has increased to perhaps 20 per cent more owing to feed and labor conditions. The sale of wood from the cleared area in the early days helped to pay the cost of clearing. Planting of old vineyards are 8x8 feet, or 680 vines to the acre, but the more recent plantings are 10x10 feet, or 440 vines to the acre, with each acre forming a block for the passage of teams during the harvest. The cost of young vines averages through a period of five years of about \$5 per 1,000, with imported or rare stock as high as \$10 per M. Two good plowings are customary prior to planting at a cost of about \$2.50 to \$3.00 each per acre. Planting costs \$15 per acre. Cultivation commences immediately after planting at a cost of about \$1.00 per acre. The vines begin to bear in the third year and by the fourth a full crop may be expected. The vines are tied to 6-foot stakes the second year which costs \$5.00 per 100. The amount of cultivation necessary depends very largely on the soil conditions. Some years harrowing is unnecessary, but the ground should be kept in a good mellow condition free from large clods. Weeding and hoeing are a constant necessity and will approximate about \$1.75 an acre. Once a year the vines are pruned and suckered at a cost of about \$3.00 per acre. This is sometimes done on contract but has not proven satisfactory in the past. An expert pruner if a diligent workman can cover about 1 to 1½ acres per day, depending upon the season and the condition of the vines, age, etc., Plowing once a year is a necessity, however, at a cost of about \$2.50 to \$3.00, and when harrowing is necessary the cost of the two will be about \$4 per acre. One year the plowing is from the vines and the next year towards them, thus keeping the earth from being worked away from the plant and down the hillside. Some vineyardists plow two furrows from the vines thus banking the soil towards the vines. A spring-toothed harrow is used and cross harrowing is the general practice when necessary to harrow at all. A weed cutter is often run over the vineyard the second time. It is customary to sulphur for mildew twice a year in this section and sometimes three applications are necessary. Owing to the present high price of sulphur, about \$1.50 will about cover the cost of each application per acre not including labor or shipment. Total cost of production and maintenance until time of full bearing will therefore be about as follows:

Clearing land, one acre, average.....	\$ 50.00
Two plowing 1st year, 1 each succeeding 3 yrs. at \$2.75 each.....	13.75
4 cultivations, at \$1.00 each.....	4.00
440 vines at \$5.00 per M.	2.20
440 stakes (second year,) at \$5.00 per 100.....	22.00
Labor of tying.....	2.50
Weeding and hoeing, twice each year, minimum.....	14.00
Cross harrowing every other year, at \$1.25.....	2.50
Sulphuring, once first two years, twice each yr. following.....	9.00
Approximate total	\$119.95

Varieties—

The standard varieties are the Mataro, Zinfandel and Riesling, the imported French grapes are the Petit Sirah, Cabernet Sauvignon, Sauvignon Vert and Semillin.

Diseases, Pests and Hindrances—

No phylloxera has ever been found in the county and there is opportunity in the Gabilan Mountains to grow twice the present acreage of grapes, under the most favorable climatic conditions. Mildew is universally combated by dusting with sulphur and during one past season the grape leaf hopper gave considerable trouble. The vines in this county are particularly healthy and some of the old plantings are yet bearing and in healthy condition after fifty or sixty years. The first sulphuring takes place when the shoots are two or three inches long, the second when the vines are in bloom. Gophers, squirrels and cutworms give trouble in some localities.

Harvesting, Marketing, Yield and Selling Price—

All nationalities are employed in the harvest time, but the most satisfactory have proved to be either French or Italians. The harvesting is by contract labor at from \$3.00 to \$4.00 per day, the laborers boarding themselves although sleeping quarters are provided. Harvesting begins about the middle of September and the season lasts for about two months. There are three wineries in the county which purchase the grapes from the neighboring vineyards, and manufacture for shipment. The grower during the past five years has received an average price of \$12 to \$14 per ton, this during one year, when the vintage was scarce, rose to \$20 per ton. The hillsides yield grapes higher in sugar content than those on the level stretches, although the latter bear more heavily. Some of the finest varieties bear only 2 or 3 tons per acre, but the average on vineyards throughout the county, both hill land and level, will run about five tons per acre. About 140 gallons of wine is made from each ton of grapes or an average of 700 gallons per acre. This brings a price of at least 15 cents per gallon, although the vintage from many acres of choice imported varieties is aged in bonded warehouses. On a bearing vineyard with normal crop at least \$105 per acre gross profit should be realized. The grapes are picked into 40 pound lug boxes and hauled to the winery.

Price of Land—

Uncleared land suitable for vineyards runs from \$20 to \$200 per acre

for land less heavily timbered and more free from stones. Eliminating the possibility of State-wide prohibition, bearing vineyards are worth from \$300 to \$350 per acre. Although there are in the Gabilan Mountains many acres planted to grapes, there still remain large acreages applicable to the profitable production of grapes.

ALMONDS

AUTHORITIES: Ed. Stone, August Skow; Leonard H. Day, Horticultural Commissioner of San Benito County, Hollister.

Extent and Sections—

There are 324 acres of almonds in San Benito County, 139 of bearing age and 185 non-bearing. The older orchards are all located in the San Juan Valley. More recent orchards now coming in to bearing indicate that the almond is capable of bringing very good returns in other sections which are not troubled with the leaf shot-hole disease as all those in San Juan Valley. Several young orchards have been planted on the shallow soils on the rolling lands east of Hollister. These are growing nicely but have not reached bearing age. Old trees planted in home yards seem to indicate a future possibility for the almond on these lands. Killing frosts seldom occur on these rolling lands.

Climate and Soil—

Climatic conditions favor the almonds, although late frosts occasionally thin the crop very materially in the colder districts.

The old orchards are on sandy or loamy soils, under irrigation. The shallow soils above referred to are light loams one and a half to three feet deep on top of a layer of clay one to two feet thick and this in turn is underlain with sand, silt and gravel. Roots readily penetrate the clay.

Planting and Costs—

Prior to planting the land should be given a very deep plowing from 8 to 10 inches. This costs in large tracts from \$3.00 to \$3.50 per acre when a tractor is used. Harrowing follows immediately and the spring-toothed harrow is preferred on the soils planted to almonds in this county. For cultural and planting costs, see "Apricots" on page 17. While many of the orchards are planted 22x22 feet, 30x30 feet, or 48 trees to the acre, is the recommended plan for the richer soils. Holes are dug about 18x24 inches. Digging the holes, setting the trees and filling will cost about 10 cents per tree. Young stock is worth about 18 cents each. Planting an acre of almonds will then average about \$4.80 for planting and \$8.64 for stock with an allowance of about \$4.50 an acre for the first irrigation of 48 trees per acre. Many growers allow 6 to 7 gallons of water to each young tree immediately after planting if late spring rains are not heavy.

Varieties—

The I. X. L., Nonpareil and Ne Plus Ultra are the Commercial varieties in the older orchards. Later plantings include not only these varieties, but Drake's Seeding and Texas Prolific, for pollination.

Pruning—

For the first three years, 50 cents per acre should cover the yearly cost of pruning. The young tree is headed back with two or four branches spread about 4 inches apart. From the fourth year on, every three or

four years the tree should be pruned and the dead wood cut out at a cost of 25 cents to 30 cents per tree. This applies most particularly to the I. X. L.

Spraying, Pests and Hindrances—

Lime sulphur is sometimes used before the buds open in the spring for red spider, at a cost of \$7.50 per acre, although the latter is higher in price at the present time. The red spider here is not so troublesome as in warmer sections of the State. A species of shot-hole fungus peculiar to this district often causes a severe dropping of the leaves before the nuts are ripe. A satisfactory remedy has not yet been found, though investigations are underway by the County Horticultural Commissioner.

Irrigation and Fertilization—

After the spring plowing the orchard is irrigated in checks of one tree to the check. This number is increased in orchards level in character. This costs \$2.50 for water under the ditch and about ten per cent more for private pumping plants, with a like charge for labor for putting the water on the orchard. (See "Irrigation, Apricots," on page 20.) In bearing orchards it is the practice to grow cover crops, or encourage a rank growth of weeds which are plowed under in the spring.

Cultivation—

Where horses are used for plowing and cultivating it is estimated that a man with four horses can cover 10 to 15 acres per day. At least four cultivations are given yearly and about the first week in September the ground is slabbed preparatory to harvesting.

Harvesting and Marketing—

Harvesting begins about the 10th of September, and the nuts are knocked off the tree with poles onto duck sheets spread under the tree. Picking into lug boxes from the ground costs about 1½ cents per pound. Hauled to the sheds the nuts when shell by hand cost about \$7.85 per ton and when shelled by machine about \$4.00 per ton. In handling the paper shell varieties, more care must be exercised and the loss when machine is used for them is about 1 to 3. Sacks holding about 100 pounds are furnished the grower. Within the past two years nut meat has been a choice shipment from this section and gives opportunity for expansion to meet the demand of the city markets. For every dollar expended for picking over the waste piles from the nut sheller it is estimated that at least \$3.00 is returned. This is coarse hand labor and averages about 16 cents per ton.

Yield and Selling Price, Profits—

One ton an acre has been enjoyed by many orchards but the average yield throughout the county is about .7 ton. Prices per pound to the grower for the past five years, f. o. b. warehouse, were as follows:

1914, 15 cents; 1915, 12½ cents; 1916, 16 cents; 1917, 16 cents; 1918, 18 cents; 1919, 24 cents has already been offered.

During the years when the price was high, \$500 per acre net profit has been made, but the average is about \$250 per acre. Many growers base their scale of cultural endeavors for almond orchards on a return of 12½ per cent on their investment.

Price of Land—

Unimproved land suitable for almonds is held at \$200 to \$300 per acre. The more shallow lands east of Hollister as referred to sells for \$100 to \$150 per acre. Bearing orchards from \$600 to \$1,000 per acre.

WALNUTS

AUTHORITIES: S. C. Hain, orchardist, Tres Pinos; Leonard H. Day, Horticultural Commissioner of San Benito County, Hollister.

Extent and Sections—

There are 687 acres of walnut trees, 73 of which are bearing and 614 non-bearing. Most of the commercial plantings are situated on bottom or bench lands, on a sandy or gravelly loam, although they bear more quickly and heavily when the soil is deep and well drained. Recent large plantings in the mountain country are doing well, full of blossoms and catkins though but three years old. Many trees are found in family orchards and along drives throughout the county, and these would-be money makers, if grafted over to blight resistant varieties.

Setting Out the Orchard and Production—

One year old trees on a two year old black walnut root cost from 50 cents to \$1.00 each. Trees are set out in January and February, the hole must be deep and wide, at least 24x24 inches. Approved method of planting is 50x50 feet, or 17 trees to the acre, although some plantings of 40x40 feet, or 27 trees to the acre, have been made. One large well kept orchard is planted in the former dimensions, with apricot trees alternating every 25 feet. It is the intention of the owner to grub out the apricots when the walnut trees are about 10 years old. The walnut is hardy after getting a start and will withstand quite a bit of frost.

It is important that the soil be kept well cultivated. Two irrigations per year after the trees come into bearing, are given where irrigation is possible; the amount being determined by the rainfall and soil moisture in the orchard. Six year old trees, which had received cultivation only, bore 15½ pounds of nuts each, 1st grade, marketable for 18 to 20 cents per pound, in 1916. This crop paid the cultivation cost of the orchard.

Varieties—

Late blooming, blight resistant varieties grafted on a two year old northern California black root are the logical pick for San Benito County. The San Jose Mayette is a good variety, blossoming very late and slow growing, but in orchards where intense heat radiates, its foliage being light, renders it liable to sunburn. The Maylan is equally late to start blossoming, but has the advantage of heavy foliage but requires much shaping. Nuts grade No. 1 and extra. Concord and Franquette slower growth, heavy foliage and not so profuse in bearing. The Payne a steady, hardy grower of heavy foliage and average yield.

Seedlings—

For starting black walnuts in nursery rows the California black should be used. In the fall layer these in damp sand on the south side of some building or close board fence, where they will sprout under the influence of the warm sun reflected from the wall in late winter. As soon as they start to break open plant in rows four feet apart, 3 to 4 inches deep and

about 8 inches distant from each other, placing the pointed end downward. Cultivate and water when needed. The following spring discard all except the hardy, well started trees, and set out. It is best not to hurry in the matter of grafting—four years is soon enough. When grafted by experts from nurseries about 35 cents per tree is the cost, the nurserymen furnishing the grafting wood, 4 to 6 grafts being put in each tree. To protect the graft from pests and weather some cover the stub with a paper bag until the new growth starts.

Shaping and Pruning—

Grafted trees from the nursery are cut off at various heights, often being planted in orchard form. The usual height is three feet from the ground. Some very successful growers in other parts of California think it is best to cut the tree off a few buds above the graft and start a new trunk by selecting one upright shoot and tying this to a tall stake. This new trunk is cut to a height anywhere from three to six feet high the next winter. The advantage demonstrated for this system is that the new trunk conducts sap faster than the old trunk and thus makes more rapid growth of tree. Future pruning consists solely in cutting out superfluous branches to get the desired shape of tree. For varieties that grow rank and ill-shaped some growers tie with cord or rope either from limb to limb or to board props lashed to the trunk. It is best to cross the string between the board and the limb to prevent chafing. Rank-growing grafts must be tied to board props nailed to the trunk of stub.

Yield and Selling Price—

The walnut responds readily to good treatment, although many neglected trees bear paying crops. Phenomenal yields from individual trees which average 400 to 440 pounds of nuts throughout a period of 20 years selling for the average price during that length of time of 11.95 cents per pound; or 14.33 cents per pound for the past ten years since the value and demand for the walnut has been more firmly established throughout the commercial world. In neighboring counties the average yield is about 1,000 pounds per acre on trees 12 years old.

Price of Land—

Raw land suitable for walnuts can be obtained for \$200 to \$250 per acre, and bearing orchards not generally obtainable, are valued at \$800 to \$1,000 per acre.

SUMMARY OF FRUIT ACREAGE AND ORCHARD TREES PLANTED

Compiled by the County Horticultural Commissioner.

The top line of figures in each group represents the planted trees.

	Acres 7 yrs. & up	Acres, 1 to 6 yrs. inclusive.	Acres plant. in spring '19.	Acres Total
Almonds	164	160	35	359
Apples	160	65		225
Apricots	1554	2912	570	5,036
Cherries	90	30	11	131
Canning peach	150	225	155	530
Drying peach	70	61	18	149
Pears	220	740	130	1,090
Plums, canning		10		10
Prunes	2000	2448	490	4,938
Walnuts	87	600	65	752
Total acreage				13,220
Grapes (wine)				750
Grapes (raisin)				10
Grapes (table)				25
Total acreage				785



THIS IS NOT A FRUIT TREE
It is just one of Hollister's many big rose trees.

DAIRYING INDUSTRY

AUTHORITIES: R. W. O'Bannon, M. D., Hollister; G. J. Jarvis, San Felipe District; John Royles, San Juan.

Extent and Sections—

From the standpoint of climate, forage, grain crops and marketing facilities, Hollister and San Juan Valleys are naturally adapted to dairying. A creamery is situated in Hollister and several of the larger dairies have installed their own butter making apparatus. The dairies in the San Juan valley which do not sell their milk to the Alpine condensery or the creamery, find ready markets for cream at coast points on the S. P. It may be said that the dairying industry, however, centers in the San Felipe district, and many acres of pasture in the Bolsa affords feed during the spring and winter months. When sold to the creameries, the milk is separated on the ranch and the skim milk used for calf and hog feed.

Equipment—

Good dairy barns and rigid sanitation are the rule throughout the entire section. The majority of the milking sheds are floored with concrete and some are equipped with feed yokes. Perhaps the finest example of its kind is the establishment of the Smith Co. on the Brook Hollow Farm. Here every facility to prevent waste and minimize hand labor is found. An overhead trolley system makes possible the handling of one ton of ensilage or feed by one man, to the individual feed mangers, which are concrete throughout with the metal partition hinged in such manner to enable hosing out as a single unit when lifted. A trolley manure car runs through the barns and over a gangway 150 feet long, with a loading platform where the manure spreaders are loaded for the field. One 70 and two 180 ton silos supply succulent feed for the stock.

The separator plant installed here is the outcome of over twenty years of dairying experience in many sections and reaches the acme of economy, sanitation and efficiency. The milker empties his bucket in a separate room from that which the milk is being separated. From the receiving hopper it flows by gravity into the separator. Every efficient improvement for the creamery is being installed from can and bottle cleaner to gasoline engine. The management of the milking herd and the raising of calves is unique and to judge from the milk records of the cows and the silky coats of the alert, bright-eyed calves, is highly successful.

The herd is not fed as a unit, the ration being different for individual cows. The calves are separated from their mothers from the time of birth. Calf pens are roofed, bedded with fresh, clean straw and open on the south to admit sunlight and fresh air. Corrals are adjacent and used when the babies demand exercise or are old enough to be put on green pasture.

A hay barn with 200 tons capacity, granary and feed room are in conjunction. A Smalley feed cutter with mixing bins for the preparation of balanced rations are part of this plant. The water supply is brought

4,000 feet down the hillside from springs, inexhaustible and clear at all times. Every employee has his own house and no detail is too small to be overlooked or neglected by the owner.

Feed and Ensilage—

With a silo, more economical and satisfactory feeding is possible and there are silos on about 40 per cent of the dairy ranches through the county. These, however, are not made to render maximum efficiency. It is the custom of the majority to pasture the year round. Roughage, ensilage, hay or balanced ration is fed only at milking time. Whenever possible the dairyman raises his own hay and ensilage, turning the cows out to graze as they dry up which is about two months of the year. About one pound of cotton-seed cake in conjunction with other rations, for each head has brought good results in production; that of corral fed cows, in comparison to those pastured, is very much higher and the net profit greater. It is well therefore to have land suitable for raising field crops for the silo, as well as hay and grain land. Pasture land in the San Felipe Valley is held at \$50 per acre up. Some of this is capable of producing crops of wheat, oats and barley and the stubble fields are always in demand for hog and beef cattle fattening. From 30 to 40 pounds of hay is allowed per head per day, depending upon the quality, when the herd is corral fed. Beet tops, pumpkins, horse beans, alfalfa stubble, sudan grass, feterita and many other field crops have been utilized, especially during years of crop shortage.

ALFALFA

AUTHORITIES: Edward T. Stone, Jos. Herbert, Hollister; A. G. Turner, Dunneville.

Extent and Sections—

It is only within the past five years that alfalfa has become one of the important field crops in San Benito County, and the value of alfalfa for feeding all classes of stock as well as poultry is gradually becoming more appreciated by the ranchers throughout the valleys. Many bench and bottom lands are irrigable and capable of producing large crops of alfalfa of the highest quality. The acreage for 1918 has doubled that of 1916, and runs near 2,800 acres, most of which is irrigated.

Climate, Soil and Methods of Production—

The San Juan, Hollister and San Benito districts and valleys in the hills, where water is obtainable, are all well suited to alfalfa. It will thrive on a great variety of soils, though probably the best returns are realized from fields on sandy loam. The checks here run very small, seldom being more than 25 or 30 feet wide, the length depending upon the drop of the land, but averaging from 600 feet to half a mile. Many favor the contour check where the land experiences a drop of more than 10 feet to the mile. This method costs considerably more and it is difficult to estimate even an approximate price for leveling and checking per acre. It would run from \$15 per acre in light, easily worked soils well towards \$50 on the heavier lands, per acre. Under the irrigation system water costs \$2.00 per irrigation which is usually from 10 to 17 inches each application, and is given with benefit after each cutting. Much of this goes towards drowning out the gophers, which are the chief pests of the alfalfa

raiser in this section. Some morning glory is found, but in isolated sections, and with care is easily controlled. Dodder is present in negligible quantities but does not give much cause for uneasiness among either hay buyers or dairymen.

Proper preparation of the land before planting consists of a good deep plowing, followed by harrowing at a cost of about \$3.25 per acre. Disc drill seems to be the favorite in this section and about 20 pounds of seed in light land and 25 pounds in heavy land is used. Many estimate the cost \$4.50 to \$5.50 per acre for putting in, not including leveling or checking. Some of the finest alfalfa stands in the county are in the Bolsa section on extremely heavy land where yields of six cuttings, averaging from 6 to 10 tons per year per acre, are realized. There is always the chance in the San Felipe and Bolsa districts, where an extremely high water table is maintained, of the tap roots rotting off and the stand becoming thin and poor. In especially sheltered valleys where the soil is light and rich, yields have run as high as 10 and 12 tons for the five or six cuttings per season. Many small patches and in the Bitterwater Valley large acreages bear substantial crops without irrigation. These in the Hollister and foothill sections average $1\frac{1}{2}$ tons per cutting and in the Bitterwater a truly phenomenal yield of 5 to 7 tons per year is enjoyed. Four to six crops are harvested from these non-irrigated sections and the quality of the hay produced is vastly superior in nutritive qualities and commands a better price at local hay markets.

The life of the patch averages ten years, if not pastured, but most of it is, and begins to thin out after 5 to 6 years.

Most of the planting is done in the fall and the first crop in the valleys harvested about the middle of April in normal years. Some practice spring-toothing every spring to loosen up the soil. Often poor spots develop throughout the field from baking or hardening of the surface.

Breeds and Costs—

The Holstein here, as elsewhere, is the favorite among dairymen, and several herds of high-grade and pure bred stock and imported bulls are found. Much money has been expended and care exercised in bringing in heads of herds from the highest producing lines. Pure bred Holsteins or Jerseys may be bought in the county or at auction outside for \$150 to \$300 per head. Holstein, Durham and Jersey grades are in the majority. Many of the grade dairymen are frank in their assertion that the pure-bred pays better than the grade, but the initial outlay is too large to permit many to start with even a high grade herd. The poor producer is watched and her milk weighed for a week in each month in many of the grade herds and she goes to the butcher if below the standard. An apparently large producer is often found to be giving very watery milk. Prices for grade stock run about as follows: Milch cows, \$75 to \$100; heifers coming fresh \$50 to \$60; weanlings, bull calves 6 to 10 days old, \$6 to \$8; heifers 2 or 3 days old, \$10; veal calves 4 to 5 months old, \$18 to \$20; grade bulls not registered, \$100 to \$150. Heifers only from good producers are raised.

Production—

From purebred herds 30 to 50 pounds of milk per day is a regular average, or 1 1-3 pounds of butter, 80 per cent of which is fat. From one grade herd for a period covering one year, 13 Holstein grade cows produced an average of 8,083.46 pounds of milks each or a daily average for the ten months milked of 30.278 pounds. The amount of cream runs from 29 to 42 per cent butterfat, varying with the feed and pasture. One factor in favor of the grade herd is that they will on poor rations or pasture, produce more and stay in better condition than the purebred. The cows freshen throughout the year and no effort is made to bring the herd in together. Some milking is going on every month and the supply is about the same throughout the year.

Rental—

Few ranches are conducted on a rental basis and these mostly in the San Felipe district among the Italian-Swiss. Rental varies according to buildings, stock and equipment, but averages about \$20 per acre per year. On long term leases, the renter sometimes puts in alfalfa. On an equipped dairy ranch on a share basis the owner takes half of the net profits and three fourths of the calves.

The majority of the dairies are small, and milking only a string, do not employ outside help. Many make cheese from the skim milk marketing the cream independently, or sell the skim milk to the cheese factory.

Calves—

Bull calves from high producing lines are either raised or sold for breeding purposes. The male offspring of the grade cow quickly goes to the butcher for veal, or at 9 or 10 months brings from \$12 to \$14 per head. Heifers in both cases are usually raised unless from "boarders." Purebred Holstein steers, long 2's, will weigh 1,000 pounds and bring from \$125 to \$135 per head.

Diseases, Pests and Insects—

Little tuberculosis is found, but blackleg, especially among fat yearlings and two year olds, has caused much loss. Vaccination in recent years for this is becoming universal. White scours, among calves put on green feed too soon or allowed to overeat, is prevalent, as is pneumonia among calves born in the late winter.

A herd testing and milk testing association is contemplated; and without doubt this will materially aid the dairymen as well as arouse competitive interest and ambition among the grade dairymen, many of whom are anxious to improve their stock, methods and condition without the knowledge of how to start.

The State inspection is very rigid and the sanitary condition of the dairies throughout the county compares favorably with any in California.

Creamery—

AUTHORITY: A. Wirz, Manager Hollister Creamery.

The capacity of the Hollister Creamery is 1,200 pounds of butter daily, and at the present time about 4,800 pounds per week is going out by express. This is marketed under the trade brand of "Hollister Creamery Butter" in 2-lb. cartons in the San Jose market and in 68-lb. tubs for the

San Francisco market. About fifty per cent of the dairymen throughout the county bring their cream after separation on the ranch to the creamery. The price paid is 3 cents above the San Francisco market quotation for A-No. 1 cream. A collection truck runs to the dairies in the San Juan Valley but the bulk of the cream comes from the hill ranches along the San Benito River and Tres Pinos Creek. These ranchers are taking a most active interest in dairy cattle where formerly only beef stock were raised. Sanitary conditions are immensely improved during recent inspections. All butter is pasteurized. The buttermilk is sold back to the farmer to be used for hog, calf or chicken feed at a price of 2 cents per gallon, or 1 cent to patrons of the creamery. The cream for the entire county will average about 33 per cent butterfat, which could be materially increased by more careful consideration of feeds, balanced rations, ensilage and the breeding up dairy herds for better production. The dairyman owns his cans and three to each string milked is said to be about the required number. These cost \$3.50 each on an average.

CHEESE FACTORIES

AUTHORITIES: Albert Orr, Frazell's Cheese Factory, F. M. Frazell, Dunneville; B. Zanon, Dunneville.

Frazell's Cheese Factory at Dunneville manufactures a very high grade, full cream cheese, and also Young America and a special product of its factory is the California Milk "Vile" Cheese. The capacity of this plant is 1100 to 1200 pounds of cheese per day and the ageing room is usually packed to full capacity. From ten to seventeen days are allowed to fully mature the best product. Two Cheese vats, each of 4,500 pounds milk capacity, provide clean and spotless work for from three to five men. The cheese is shipped in wooden cases holding two and four cheese, the larger size being returned from the markets to which the product is consigned at the expense of the owner. Should a dairyman wish cheese manufactured from milk of his own herd, a charge of \$1.50 per 100 pounds of cheese is made. It formerly was the custom to return the whey to the dairymen, but in recent seasons this has been kept by the cheese factory to furnish hog feed to its own and neighboring herds. Prices run 2 to 3½ cents above San Francisco market quotations for whole milk. About 75 per cent of the dairymen in the San Felipe district sell their milk to the cheese factory.

Since Parmesan cheese is not generally obtainable, the manufacture of Monterey, or as it is commonly called, "Jack" cheese, has been greatly stimulated throughout the Italian-Swiss dairying sections of California. Many small dairies make a limited quantity of this delicious article and from a string of cows a very good return may be derived if the dairymen know the secret of making and properly ageing this commodity. Small cheese plants with from 50 to 75 pounds per day capacity for cheese, are conducted on many of the ranches throughout the San Felipe district. The prices for this brand of cheese have averaged 22 cents per pound in 1917, against 18 and 19½ cents for the two preceeding years, respectively.

MILK CONDENSERY

AUTHORITIES: A. R. Patrick, President and Manager Alpine Evaporated Cream Co.; H. H. Whitmore, Secretary San Benito County Chamber of Commerce.

Extent and Importance—

The Alpine Evaporated Cream Co.'s condensery was established in Hollister in 1904. The plant covers two acres and consists of factory, or process room, boiler and engine room and warehouses. It has the latest and most up-to-date machinery and is fully equipped. Its capacity is 500 cases containing either 48 pint cans or 96 half pint cans per case, daily. The output in cans is 30,000 per day.

High wages are paid and the bonus system encourages men to remain and qualify for steady and better paying positions in the process room. At the end of each six month period each employee is paid a bonus of ten per cent for having worked steadily for that time. The business has increased to such extent a plant has been established in Gonzales.

Since January 1st, 1917, a bonus is being paid the dairymen each month based on the profit of the company. This is done to encourage more dairymen to lease alfalfa lands, as about half the acreage now planted is used for dairy feed. The price paid for milk is the California fancy flat cheese market rate of 10 to 1 per 100 pounds of 4 per cent milk. 1916 average was \$1.55; 1917, \$2.06.

The demand has increased during the past 3 or 4 years more than 5 or 6 preceding that time, and the market is assured. The future therefore depends upon the dairyman leasing the alfalfa lands or planting a greater acreage to dairy feeds, forage plants and in increasing the number and quality of the dairy herds.



CATTLE SCENE IN SAN BENITO COUNTY.

LIVESTOCK INDUSTRY

Extent and Importance—

Since the days of the *hidalgos* the stock raising industry has been the backbone of commerce throughout the county and horses, both draft and light stock are aristocrats, winning their share of blue ribbons and purses wherever the horse is king. So important is the subject of livestock in San Benito County and so varied its phases that we shall review the different divisions alphabetically.

BEEF CATTLE

AUTHORITIES: A. H. Fredson, Jr., Hollister; Dr. C. S. Brooks, County Veterinarian; Hugh French, Chas. Hawkins, Hollister; John Indart, Tres Pinos; John Ashurst, Vallecitos.

Breeds—

Shorthorn and Hereford are the principal beef breeds while the majority of the herds are grades, sometimes sired by purebred bulls. No extensive efforts have been made throughout the county toward purebreeding except by the Paicines Rancho, Pacheco Cattle Company and the Barco Rancho, which maintain Shorthorn herds. The Paicines herd of about 800 head is considered by some stockmen to be as a unit, one of the finest in the U. S. Constant demand from breeding farms outside of California for young heifers and bulls proves the sterling reputation of the sires. It is a question of constant debate between cattlemen, however, whether the additional cost of purebred stock and its practicability on the range, especially when the year is short, is warranted by any quicker or better maturity of the steers. It is a known fact that the good grade animal will mature and fatten on pasture, where the purebred would be rough and lose weight. For this reason, in such a country as is the majority of San Benito County's range land and to meet the price which the average cattle man is willing to pay, the grade is the logical answer.

Maturity and Selling—

The shipments from the entire county are based on prices f. o. b. shipping point, which is either King City, Hollister, Hudner or Tres Pinos, although some steers from the San Felipe district are driven to Gilroy for shipment. Steers are usually sold as three year olds, or long two's, and the cattle buyers from the various packing houses travel throughout the county and contract for carload lots, with cut-back privileges. Cows are sold at from 6 to 10 years of age. Grade heifers, either Shorthorn or Hereford, just coming fresh may be purchased from \$50 up, while 4 or 5 year old cows demand from \$75 up per head. Purebreds bring any price from \$200 to \$10,000. Most of the purebred herd bulls have been purchased at the International or State Fairs or during the dispersal sales of various famous herds throughout the State. Unless there is particularly short range, as in 1913 and 1917, not much activity

is encountered in the veal calf line, except in dairy herds. The prices obtained throughout the past years for beef steers vary so widely, according to range, handling, quantity and dressing percentage, that no fair approximate price can be given.

Range, Feed and Water—

During the winter and spring months until the feed in the hills becomes exhausted, the cattle are turned out in the mountain pastures. Cows with their calves are kept in separate fields from the steers. After the grain in the valleys is harvested the herds are moved down to feed on the stubble fields. Throughout the hill section during normal years about 15 acres per head is allowed and in some districts, where the quality and quantity of the grass is high, 7 acres per head is sufficient. Some government land situated in the least desirable portion of the hill lands provides a very poor pasturage and, wherever possible and practical, is used for sheep rather than for beef cattle. Adjoining the southern end of the county the Monterey National Forest Reserve is given over to grazing interests at a minimum cost to the stockman, but such pasturage to the man who desires quick maturity and good prices for his stock is a loss in the long run.

The matter of providing clear, fresh water for stock is the most important thing, and the careful and successful stockman pipes water from springs and small canyons into troughs that the cattle may constantly have a pure drinking supply.

But one ranch in the county uses fattening pens for steers, though this is the practice on the huge farm of Miller & Lux, just over the county line near Sargents. The silo is used in dairying, but with the exception of the one ranch cited above, no ensilage, roughage or finishing feeds are used with beef cattle. This ranch fattens on silage, rolled barley and cottonseed meal for winter beef and their pens accommodate about 250 head.

Diseases, Pests and Hindrances—

The stockman who believes in "an ounce of prevention," vaccinates against anthrax and blackleg, both of which have at various times depleted herds throughout every section of the county. Lumpy jaw is found in most of the hills herds and some cases of tick have been encountered in past year. The majority of stockmen with their cowboys ride over the grazing ranges at least twice a week, cutting out sick cattle and look out for symptoms of either blackleg or anthrax. As a whole the cattle from this section of the State are healthy.

The day of the old time vaquero is not over, and anyone who doubts it need but to motor through San Benito County. More horses under the ornate, high pummeled Mexican saddle with its inevitable coil of rope will be encountered than in any other section of California. One should attend the picnics and rodeos held during the spring and fall round-ups to fully appreciate the fact that within 100 miles of San Francisco, you may meet Mr. Cowboy "lassoing," branding or cutting out, garbed in Angora or bearskin "chaps," Stetson, and fancy stitched, high-heeled Texan boots to accommodate the huge silver rowel of his spur, riding as hard and as recklessly as did his predecessors of fifty years ago.

HOGS

AUTHORITY: R. W. O'Bannon, M. D., Hollister.

Extent and Sections—

Although nearly every dairy ranch has a few head of hogs to which are given the skim milk, no concentrated effort is made to develop the industry as a large commercial factor of the county's livestock production. In the mountains acorn fed hogs bring a few cents less than the pen or stubble fattened animals but are of an inferior quality. The San Benito and Big Panoche Valleys pay more attention to hog raising than is given elsewhere, but the profits obtained where transportation facilities aid in quick shipment without loss of weight and the expense of a long haul, or drive, hold the industry back in both these districts. Hogs are driven from San Benito Valley to either King City or Tres Pinos in 3½ days at a cost of about \$25 per carload.

Breeds and Cost of Stock—

Although there are several purebred boars in the county—Berkshire, Poland China, and Duroc Jersey—few ranches are equipped with breeding or farrowing pens and the herd is allowed to run loose. The majority of these show plainly their varied ancestry in markings, conformation and poor development. Purebred sows are obtainable for \$75 to \$100; boars \$250 up; weanlings, (purebred) \$25; and grades from \$7.50 for shoats to \$50 for a fair brood sow. The stubble fields and alfalfa patches in the valley are too valuable as cattle and stock feed to encourage large hog herds. Ensilage is seldom fed to hogs and, although the soil and climate offer boundless opportunity for the growing of corn and sorghums, little effort has been made in this direction except by a few ultra-progressive ranchers. It seems unfortunate that with everything in their favor the hog raisers do not take advantage of modern and economic methods of handling and feeding. Purebred stock on corn at six months will tip the scales to 200 pounds when pen fed. Demand for lard hogs has been increasing the past two years and the price has ranged from 8½ cents to 11 cents per pound on the hoof, f. o. b. shipping point. Many orchardists allow their hogs the run of the orchards after the fruit harvest to clean up the culls, but this is not advocated either for the health of the animal or the quality of the pork produced. Stock beets are grown to some extent and these with the beet tops obtainable during the sugar beet harvest make a succulent feed. Some ranches fatten off their hogs by running on alfalfa, and it is estimated that it takes about 4 pounds of wheat or 5 to 6 pounds of barley to put on 1 pound of weight. If this be so, the selling price must be 7½ cents or over, and barley not above 1½ cents per pound in order to realize a profit. Few ranchers have constructed self-feeding bins which will accommodate 100 head when filled every other day and cost about \$3.00 each to build. Some tankage is fed on ranches where obtainable. Grade shoats at six months should weigh 100 pounds, and at ten months 200 pounds. Brood sows on ranches where hogs are a principal line are put in pens 4 or 5 days before farrowing time and turned out on stubble or alfalfa about two weeks after that time. The litter average from six to nine pigs throughout the county.

Disease and Pests—

Few of the mountain ranchers ever think of vaccination for hog cholera, but it is universally practiced throughout the valley ranches where hogs are kept, although no serious epidemic has manifested itself in the county to date. The two years immunizing treatment is the one generally used. Lice, especially during the hot weather, are prevalent and dipping is advocated whenever necessary. Clean pens, water and bedding is one solution of this pest.

HORSES

AUTHORITIES: A. H. Fredson, Jr., Charles Overfelt, Hollister; Miss Domie Indart, Tres Pinos; A. G. Turner, Dunneville.

Extent and Importance—

For many years San Benito County has been one of the leading counties of California in the production of fine draft stock, and nowhere in the State does one see such splendid specimens of huge bones, sweet tempered, patient horseflesh so largely used as in this section, drawing the plow or farm wagon. Up until the time when the motor truck superseded the horse on the heavy draying vans of our large cities, San Benito County annually shipped many hundred head to Oakland, San Francisco, San Jose, and Los Angeles, and carload lots have even gone north and east into other States. Then came the tractor and the more progressive decided against the horse in field and orchard. However, this latter day problem is one that will automatically adjust itself for few ranches would care to depend upon a tractor alone and give up all stock in its favor. The resultant depression from the increasing popularity of the motor car has been felt throughout every horse raising district in America. Many are the farmers, old timers, who are today losing money by maintaining their bands of draft horses. There is a hold that modern ways do not easily break in the spectacle of acres upon acres of waving, knee-high pasture over which the bands of noble work stock—huge dappled, silky beasts and inquisitive, wobbly legged colts—graze in the spring. Is there any possession of which a man is more proud than a fine horse? So they hang on in San Benito County and many lose money.

Breeds and Cost of Stock—

Shires and Belgians are the majority of the stud horses, with several fine specimens of Percheron and Clydesdale found on ranches where pure stock is favored. Most of the mares are grades bred to purebred registered stallions. They are worked on the ranch until a month before foaling time, after which they are pastured on range or valley, grazing with their colts. Most of the colts are broken in the plow team at three years, but the stock farms that supply the city demands for draft animals, seldom sell before long 4, or 5 years, when many of the purebreds will weigh from 1,400 to 1,700 pounds if from Shire sires. The market demand is for about these weights, at least 15½ hands high and 1,100 pounds. Cost of purebred stock runs about as follows:

Purebred stallions, registered.....	\$750 to \$3000
Grade and purebred unregistered stallions.....	350 to 500
Purebred mares	200 up
Grade mares	150 up
Weanlings, purebred unregistered.....	90 to 250
Weanlings, grades	50 up

Service for purebred, registered stallions runs about \$20; \$15 for grades and \$20 for Jacks, not many of which are found or favored in the county. The short, blocky orchard horse, weighing from 1,000 to 1,200 pounds, is greatly in demand.

It is readily seen that aside from the cost of animals, the prospective horse raiser must have many acres on which to raise, feed and pasture his stock. 1000 acres in about the average throughout the county for stock ranches, and some run 10,000 and over. The average ranch seldom has under a dozen brood mares and the regular stockman would have as many as his acreage would support. The ambitious investor in a draft stock ranch should have at least \$10,000 on hand and accommodation for credit for at least half that amount, before ever contemplating investment in the horse raising game.

Feed—

In this day of soaring prices for feed, nothing can safely be said regarding the present day costs of feeding any kind of stock, especially horses and chickens. In past years, however, it is estimated that it costs about \$30 per year to feed one head; four months of the year hay would be given and, although in the third and fourth year the draft animal is returning something towards its keep, a price of at least \$150 must be obtained to realize a profit. In a normal year one acre of alfalfa, which cuts 7 and 8 tons per acre, will feed about one horse. From 10 to 15 acres in good years are allowed per head for grazing land to feed the year round. During short years Sudan grass has been found to make excellent hay, relished by both horses and cattle. Stubble fields and desirable valley pasture is worth \$2.00 per head per month. Some can be rented for 50 cents to \$1.00 per acre per annum.

Equipment and Buildings—

Nearly all of the ranches are equipped with fine barns and granaries. Mostly all the hay is stored loose in the barn, although stacks containing from 25 to 50 tons are sometimes left in pastures where stock is to be quartered for the winter. Few farmers take enough pride in their stock to keep them in good coat through care, and the fine appearance and glossy coats of many are due largely to good feeding and breeding and the healthy condition prevailing throughout the county.

Saddle and Harness Stock—

Here as elsewhere, a good saddle horse from which roping may be effectively done is at a premium. On the 1,000 acre ranch at least two cowboys are the rule and the ranch generally owns the horses ridden by its vaqueros. Cattle punching in the hills and mountains is hard on man and beast and the usual life of the cattle-horse, unless he be from exceptionally resistant stock, is about ten years.

Some splendid specimens of gaited saddle stock are to be found in San Benito County, but no effort is made to properly gait either them or their get. Here lies opportunity for the experienced show trainer, when one considers the stud fees obtained by the few gaited saddlers shown at our State and San Francisco Riding and Driving Club shows. Many of the polo ponies used on the teams along the peninsula came from ranches in the San Benito foothills. Some daring and graceful riders are found, and the annual rodeos at Salinas and San Jose bring together every son and daughter of the saddle.

Some McKinnon trotting stock is found near Hollister and the clean-limbed, free-going buggy horse is the rule rather than the exception.

SHEEP

AUTHORITIES: J. F. Carey, Supt. Dunne Ranch; J. F. Etcheverry, Tres Pinos; Bernard Yturriarte, Panoche; John Indart, Tres Pinos.

Extent and Sections—

Throughout the hill land sections of the county, where feed for winter and early spring is available during lambing time, small flocks of sheep are found. The Big and Little Panoche Valleys may be considered to be the most adapted to this industry and it is from here that many animals and fleeces are shipped. Bands from the San Joaquin valley are worked over the mountains and Llanada and Panoche are the chief shipping centers for wool. Sheep are brought to Tres Pinos and shipped in carload lots while small flocks are used to supply the local butchers throughout the county. Several small flocks are maintained to furnish mutton for the large ranch mess house. The sheep men from the Panoche valley endeavor to obtain pasture, generally on stubble, during the summer months. This is always on a straight rental basis per acre. This is nearer shipping point and the weight loss in transit by the railroad is small in comparison with that of a long drive over the mountains. With the taking up of most of the available government land sheep pasture is decreasing.

Breeds and Fleece—

The smaller flocks show breeding and the majority of the fleece less shrinkage than the mountain flocks of greater number. The small bands are usually on clean pasture and some are penned at night. Rambouillet or Hampshire bucks are crossed to Merino ewes of doubtful blood lines. But two small flocks of purebred stock are maintained in the County, Hampshire and Rambouillet respectively, shearing about 9 pounds. The average fleece weighs from 4 to 6 pounds, with a shrinkage of nearly 22 per cent on range stock. Shearing takes place twice each year.

Diseases and Pests—

Flocks are bothered with wood ticks and scab that several years ago caused considerable loss. Pneumonia during winter and spring months when the season is late must be guarded against. Range sheep are dipped once and small flocks on the ranch twice a year.

POULTRY INDUSTRY

AUTHORITIES: A. A. Smith, B. W. Barrett, E. W. Kelly, F. J. Hooper, Bert Roe, A. J. Yearian, Hollister.

Extent and Sections—

Throughout the San Benito and San Juan Valleys the poultry farms which are just beginning to constitute one of San Benito's principal industries are thickly situated, and on the outskirts of both Hollister and San Juan hardly a ranch is without its quota of poultry yards. While there are quite a number of poultrymen who devote their entire time and derive their income solely from poultry, the majority of chicken ranches are conducted in conjunction with an orchard. By this method the hens derive great benefit during plowing and cultivation times by following the operator and from the shade and windbreak which the trees afford during the long summer. The single line poultryman is increasing. The majority of failure in this section of the State, where climatic and feed conditions are highly favorable to poultry and egg production, is due to the inexperienced, who attempt to start operations on too large a scale. However, where formerly 500 hens would constitute a livelihood for the poultryman, it is now necessary to increase that number to 800 to derive the same profits, due to the exorbitant price of feed during the past two seasons. The industry is one upon which San Benito County may depend as a steady and increasing source of income. This is readily corroborated by record of shipments of poultry and eggs on page 58.

A San Jose buyer comes into the county weekly during four months of the year and buys about 5,000 hens during that period, on a live weight basis concurrent with local market prices.

Cost of Stock and Equipment—

The concensus of opinion is that cheap land, even for specialized poultry purposes, does not pay and the man who grows fruit must of necessity locate on good and therefore high priced land. Some few poultrymen have bought on bench land along the San Benito River, but danger from high water and low temperature makes this slightly hazardous. The majority of the County's poultrymen hold land valued at \$150 per acre to \$500 per acre.

Many types of colony and brooder houses are found, but these universally open to the east, as southern exposure has been disastrous owing to the continuous west winds throughout the summer. Effort has been made in the following tables to give the approximate cost of construction on various types of brooder and colony houses; these figures oftimes may run more or less, depending upon the style of house desired and method of building, lumber market, etc.

Dimensions—	Approx. Cost	No. of Hens
Week's pens, 120x8 feet, with 8x8 ft. partitions..	\$500	300 to 350
Colony house, 12x14 feet.....	30	100
Colony house, 84x20 feet.....	150	250 to 300
Brooder house, 100x20 feet.....	350	2500 to 3000
(Includes stove, distillate burner and hot water system, piping, etc. Divided into 20 pens accommodating from 100 to 125 chicks to each pen. Tamped dirt floor. Cement floor \$50 additional.)		
Stove brooder house, 20x18.....	47.50	100 to 250

INCUBATORS

(All fully equipped with thermostat, lamp, trays, etc.)

Style—	Capacity	Price f. o. b. Hollister
Petaluma	63	\$12.50
	126	22.00
	252	30.00
	378	40.00
	504	52.30
	1500	price fur. upon appli'tion
Jubilee	216	31.00
	324	41.00
	504	51.00

The amount of wire netting necessary depends largely on the method of construction, number of runs fenced, height, etc. Prices for the various widths f. o. b. Hollister run about as follows per roll:

4 ft. \$5.00; 6 ft. \$8.50; 8 ft. when obtainable about \$10.50. Perhaps one of the best fencing ideas originating with one of the San Benito Co. poultrymen, is that of putting the permanent posts of his runs directly opposite the center and ends of his colony house. Attached to these is a fence the ends of which are attached to a portable post and the whole operates as a quadrant, enabling the run to be aqually divided into half on which green feed is constantly freshening while the flock runs on the other half. To guard against rats, cats and two-footed prowlers turn the wire on the boundary fences one foot outward and bury one foot deep. Then outward at top on a 45 degree angle, edge with barbed wire and support with angle joints on the posts.

Baby Chicks—

The hatchery at Hollister has a capacity of 20,000 chicks every 21 days and the average hatching percentage runs about 70 per cent. Many farmers prefer to bring their own eggs to the hatchery for incubation at an approximate cost of 5 cents per egg. Price of White Leghorn baby chicks run from 8 cents in April to 10 cents and 12 cents in January; Black Minorca 12 cents to 14 cents; 2 months old pullets \$7.00 a dozen up; 5 to 6 months old hens \$9 to \$12 per dozen. The chicks are all from Hoganized stock owned by the hatchery. Large snipments of baby chicks are constantly being made to Arizona, Nevada, Seattle, New Mexico and any point within three day's journey. The chicks are shipped in corrugated paper boxes, holding 25 chicks in each of its four compartments. The hatchery is equipped with the most modern system of water heating,

incubators and brooder facilities. Egg fertility in this section runs about 92 per cent and mortality between 6 and 10 per cent for laying hens. A few of the more careful and scientific poultrymen have Hoganized out the pick of their laying hens to breed to registered cockerels, which cost from \$5.00 to \$25.00 each.

About 4,000 of these eggs are hatched under the hen each year, so that it may be readily seen that the egg laying line is being more highly developed, although many large layers produce chicks which never distinguished themselves in this regard. This is one of the perplexing problems confronting the poultryman in every section and the individuality of the hen also makes the yearly egg production per hen, at best a tentative estimate. In the Hollister and San Juan districts the flock average is 120 to 144 eggs per hen per annum.

Cockerels may be purchased from \$1.50 each, up, according to conformation and line. About 15 hens to each cockerel is the accepted standard. The Weeks' system pens of 20 hens are used and minimum space is occupied on many poultry farms. The pens are provided with no runs and the flock kept in captivity throughout the laying period.

Breeds—

The White Leghorn here, as elsewhere, is the commercial layer. Recently small flocks of Rhode Island Reds have been increased and with the feed market at normal, there is a promising future in the raising of the Asiatic breeds for the fancy meat markets. The breed is a hearty and healthy fowl and thrives in this section better than any of the other meat breeds. Some Black Minorcas and Brown Leghorns in limited flocks are to be found and several poultrymen specialize on these breeds.

Management—

Herein lies the success or failure of the inexperienced poultryman. Individual care from the owner is one of the most effective profit producers. Many new and interesting methods of poultry management may be seen and studied profitably by visiting the various ranches throughout the two poultry districts of San Benito County. Perhaps here more than anywhere in any commercial section of California, new and individual methods of penning, fencing, colony house arrangement and equipment have been made, and it is difficult to select any one or two methods and point to them as the approved or successful ones, for the majority seem to be working out with credit.

The value of constant cleanliness is demonstrated thoroughly in the low mortality percentage where this is the watchword. Running water is another valuable adjunct and feed boxes, either screened or with slats placed close together, eliminate waste. Another economic factor in the matter of labor saving devices is double doors covered with chicken wire across the front of the colony house, instead of netting put on in one piece. By this method the spray outfit and wagon used for conveying the droppings away may be backed in. The roosts here are hinged and during the day fastened by hooks to the ridgepole. Quite a few prefer the dark laying house.

By proper feeding and handling many flocks of high percentage lay-

ers produce almost the entire year. This is one of the greatest aids to success in egg production throughout October, November and December, when the market is high and the majority of the flocks have ceased to lay.

The flocks should be gone over at least once a year and the majority of poultrymen who are making money do this twice. Also the elimination of the loafer begins before the laying period and often when the chicks come out of the incubator; vitality, conformation and general behavior being the standard of judgment. Hoganizing is practiced throughout the entire community almost without exception. The average life of the laying hen is about two years, although there are flocks which have 144 egg per-year hens which are four and five years old, yet laying 50 per cent capacity.

Maturity of Chickens—

Inasmuch as the forcing of young pullets to lay produces an egg short of the market demands in weight and size, young hens should not be counted as a commercial laying asset before eight months of age. Cock-erels, unless from a high laying percentage line, are marketed at from 4 to 6 months, bringing as broilers about 22½ cents per pound live weight. Hens bring 13 cents to 20 cents per pound live weight and the choice meat varieties at 3 years of age 35 cents per pound and more as broilers or fryers, in proportion to their term of usefulness as compared with the White Leghorn.

Feeds—

Many poultrymen grow all their green feeds and the majority raise kale, Indian corn, mangel beets, sometimes between their rows of orchard trees, while acreages of barley or alfalfa are assets in cutting the feed costs. A recent popular and cheaper feed is Manchurian or Keoling corn. One-third cent per day covering a three year average, prior to 1917, is a very close estimate of cost of feeding a laying hen, or \$1.25 per year. This has increased within the past few years to one-half a cent a day owing to the high cost of grain. Economical poultrymen make the hen work for all she eats and large quantities of feed are seldom dumped in a pile too easy of access. This is said to make the hen more energetic, alert and better laying. Chopped alfalfa, either green or dry, is the basis of all rations throughout this section. Many ranches are equipped with corn sheller and alfalfa chopper driven by a small H. P. gasoline engine. Some wheat is fed, but mostly as a balanced ration. Fish meal and beef scraps is desirable in limited quantity.

Prices and Profits—

It is estimated that each hen, netting \$1.00 to \$1.25 profit per annum, laying 12 dozen eggs per year as a minimum, which market for a five year average price of 30 cents per dozen, will produce \$3.60 plus her sale price of 60 to 75 cents at the expiration of her usefulness. This makes an annual profit of about \$1.75 (if feed cost half a cent per day) from which must be taken labor of handling, interest, depreciation on equipment, etc.

Disease and Pests—

While this section is particularly healthful for poultry, epidemics of chicken pox and roup have caused much loss at times. Vaccination for the former is practiced by the scientifically inclined poultry raisers. White

diarrhoea and worms are among the diseases which the poultryman has to contend with in any locality. Cleanliness is the safeguard against mites, worms and lice. The coops, colony houses and brooders should be gone over at least once a week and the roosts and runways kept clean. Spray of crude oil and stove distillate, carbolic acid in weak solution, copperas, and commercial compounds are used for disinfecting the buildings. A very weak solution of permanganate of potash, about 1 teaspoonful to the quart in drinking water, is of benefit once weekly. Dust baths and the separate maintenance of new stock for at least two weeks before introduction into the yards are also preventive measures. Ground shells and grit which cost about \$1.25 per cwt. should be before the flock all the time.

POULTRY AND EGG SHIPMENT

AUTHORITY: Wells Fargo & Co's. Express, Hollister.

The following were shipments of poultry and eggs from Hollister during two years, ending 1916. Shipments for 1917 and 1918 were practically the same. They represent about two-thirds of the shipments made from the county. A buyer with a motor truck hauls twice a week throughout four months of the year and shipments made from Tres Pinos and Sargent's Station on the Coast line are not obtainable at this time.

	Eggs (dozen)		Poultry (dozen)	
	1915	1916	1915	1916
January	33,840	33,750	234	330
February	45,360	46,200	198	194
March	67,500	61,950	285	276
April	82,800	75,900	426	339
May	86,250	67,500	609	735
June	74,790	42,500	705	609
July	60,660	45,500	795	762
August	45,600	37,440	591	519
September	31,010	32,550	411	365
October	22,800	22,380	318	306
November	21,660	21,750	255	237
December	26,250	22,950	438	282
Total	600,060	508,830	5257	4954

It is a fact worthy of note that nearly all of the poultrymen in this district made money during the last two years despite the high cost of feed, and this is due principally to the fact that the climatic conditions here are most excellent for the raising of poultry.

GENERAL FARMING

AUTHORITIES: Etcheverry Warehouse Co., Tres Pinos; Overfelt Bros. San Juan Valley; A. H. Fredson, Hollister; Peter Friis, Hollister; Hollister Warehouse Co.

Extent and Sections—

The valleys throughout the county were once grain and cattle ranches, and much land in the Hollister and San Juan Valley unsuitable for other purposes will probably always remain grain farms. Some very fine land in both these valleys is still devoted to hay and grain production. The shimmering expanse of green, rolling hills with their bands of magnificent draft stock and beef cattle is a spectacle to fill the heart of the owner with contentment and peace.

About 15,000 acres remain in grain, mostly barley, although some red oats and wheat are raised.

Wheat, barley and oats is sometimes the rotation for poor land. No irrigation is practiced and summer fallowing, usually inadequately done, is sometimes followed.

Climate and Soil—

Grains are grown on a variety of soils from the finest sandy loams to heavy adobe and the long growing season of warm sunshine is propitious to fair yields.

Planting and Cultivation—

About 60 pounds on good land and 120 pounds of barley on poor land is planted; wheat 75 pounds; red oats 82½ pounds per acre when sown broadcast but, if drilled, a smaller quantity is necessary. Inasmuch as barley is the principal grain crop of the county, we will deal most exclusively with that product. Great diversity of opinion exists as to the depth of plowing before planting. Old method farmers maintain that 5 inches is the maximum, while others who enjoy large yields and use tractors, plow 8 to 10 inches with satisfying results. The average farmer is always in a hurry with his grain crop and poor farming is much in evidence. Careful farmers who have cross harrowed before planting and who plow at least 6 inches, are rewarded in yields increasing more than 60 per cent over that on fields where careless and slipshod methods prevail. \$2.00 for plowing an acre a depth of 6 to 7 inches with 8 horses and 4 gang plow is the approximate cost throughout the county. Spring tooth harrowing costs about 70 cents per acre; this prior to planting either broadcast at 35 cents per acre, or drilled at 65 cents per acre, using 8 horses with a 4 row drill. The barley crop is planted any time between the first of October or the first of March. The field is generally spike harrowed and, when the stand is not too early and rank, rolled or harrowed in the spring, at a cost of 35 cents and 65 cents per acre respectively. During the past five years the price of seed barley has averaged \$1.25 per cwt.,

although 1916 saw a sharp rise to \$2.15 per cwt., and 1917, \$2.15 per cwt., 1918, \$2.25 per cwt.

Harvesting and Marketing—

Hay cutting begins in May and harvesting for grain comes in July and August, although some of the extremely early plantings may cut in May. Combined harvesters and threshing machines handle the crop, the former traveling through the country and cutting, threshing and sacking by contract. Farmers dependent upon hired threshers, cut with a header. There is of course more money to be derived in cutting barley for grain than hay, if it heads full. Laborers receive \$2.50 per day and found, or \$3.50 per day without meals. One rake will allow three mowing machines cutting 10 to 15 acres each, and can shock 30 to 45 acres per day. The approximate cost of operation per ton, either privately or hired, runs about as follows: Harvesting and threshing, \$2.00; heading, \$2.00; sackings, \$1.50; hauling, (average 5 miles,) 75 cents per ton or about 20 cents per mile; sacks formerly $7\frac{1}{2}$ to 8 cents, now 12 cents for second hand sacks. Baling costs about \$3.00 per ton, the farmer furnishing the wood and feed for the teams and the baler supplying the wire, while the farm crew must buck the hay to the baler.

Many old grain growers who raise draft stock assert that farming with a tractor is in the long run more economical and indisputably from the standpoint of time, more rapid.

Yield and Selling Price, Profits—

The yield varies greatly on different types of soil, ranging from 11 to 25 sacks to the acre, but throughout the county averaging 13 sacks per acre per year. Price obtained during the past five years including 1916, \$1.5928 per cwt. Barley hay will cut about 3-4 ton on poor land and 24 tons on loams, with an average of 1 1-3 tons per acre throughout the county, worth \$12.00 per ton for a five year period, prior to 1917. Using the figures given above it is estimated that \$26.50 gross profit is obtainable, or a net profit of \$5.00 to \$10.00 per acre, according to the quality of the soil and method of handling the crop.

Barley straw after threshing is worth \$10 per ton and the stubble fields at least 35 cents per acre for pasturage. While it has never been common through San Benito County, it is possible that two crops with the right choice including barley and some other cereal, might be grown yearly on good land. Much land on the east and northeast of Hollister extending into the Fairview, Ausaymas and San Felipe districts, for years cropped to grain and though fitted for nothing else, has within the past two years demonstrated its value and productivity in orchards with seed or truck grown as intercrops. This tells the knell of the extensive grain acreage throughout the Hollister Valley.

Wheat yields on summer fallowed land 12 sacks of grain to the acre, but is mostly cut for hay, as are oats, with yields of $1\frac{1}{2}$ to 2 tons to the acre.

Disease, Pests and Hindrances—

Loss from smut on wheat and barley and rust on oats and wheat has caused much annoyances in the past. The general practice is to prevent

smut by bluestoning seed grain before planting; both the University of California and the U. S. Department of Agriculture publish instructions and formulas and the formaldehyde treatment for this, for free distribution.

Price of Land—

Land for grain farming may be obtained in the hills for \$50 to \$75 per acre; in mountain valleys, except in Hollister and San Juan Valleys, for \$75 to \$100 per acre.

GRAIN AND MILLING

AUTHORITIES: W. H. Walker, Sperry Flour Company, C. E. Steinbeck, Manager Hollister Warehouse Company, Hollister; James P. Slaven, Manager Etcheverry Warehouse Company, Tres Pinos.

Fifteen years ago 1,000 barrels of flour were shipped from Hollister annually, but today the land is too valuable and the grain land wherever possible is being set out to fruit orchards. That still sown to grain is not producing sufficient to justify the flour milling industry longer operating within the county. Quite a large acreage is still available for barley, alfalfa and hay. It is believed that in a few years more, not very far off, barley and oat seed will be shipped into the county. The milling industry began to decline in 1889 and the Sperry Flour Company decided to eliminate small mills in favor of the larger unit. The Hollister flour mill was closed down a few years after that date and the Salinas mill operated. The Sperry Flour Company and the Hollister Warehouse Company have excellent warehouses with 2,000 and 13,000 tons capacity each, respectively, at Hollister. The Etcheverry Warehouse Company at Tres Pinos has a capacity of 5,000 tons for grain.

The Hollister Warehouse Company operates an alfalfa meal mill, its output being about 250 tons annually that is consumed locally. Used as a feed for dairy cattle and poultry it increases the value of the feedings at least fifty per cent. The meal is sacked in 80 pound sacks and the cost to the farmer for grinding his alfalfa is \$5.00 per ton. The mill is operated only to meet the local demand.

An average of 120 carloads of whole barley, weighing 15 tons to the car, leaves Hollister yearly, in addition to seventy-five to one hundred thousand sacks of rolled barley, averaging 75 pounds to the sack. Formerly oats were extensively raised in this section but of late years plantings are cut for hay and the seed is now imported. The Sperry Flour Company manufactures at Hollister rolled barley, cracked and ground wheat and corn, the bulk of which is destined to be used as chicken feed. Local consumption of barley received at this plant is about half, and the output about fifteen to twenty thousand sacks per year. Nearly 100 additional tons are contracted in addition to the 725 tons of wheat, 75 tons of ground wheat and 75 tons of cracked corn. About 25 tons of kiln dried corn is shipped in from the east yearly. Local farmers are urged by the milling companies to study more carefully the proper methods of harvesting corn so that the local product may be utilized without waste as heretofore.

A splendid seed cleaning machine is operated three weeks of each

month throughout the grain season, and from July to September runs constantly and about half the time with a day and a night crew.

Formerly flax seed and rye were shipped from Hollister.

Before the war the price of barley averaged about 1 cent per pound for fifteen years, 85 per cent sold for 85 cents to \$1.00 per sack in a normal year. Witness in the following table the average market prices to the grower for the past four years per cwt:

	1914	1915	1916	1917	1918
Barley	\$.50	\$1.25 to \$1.75	\$1.50 to \$2.15	\$2.15	\$2.25
Wheat ..	\$1.60 to \$1.75	\$1.75	\$1.75 to \$2.15

At the time of going to press prices for barley and wheat have reached figures beyond all precedent in history.

HAY

AUTHORITIES: R. P. Lathrop, President Lathrop Hay Company, Hollister; James Slaven, Manager Etcheverry Warehouse Company, Tres Pinos.

Extent and Importance—

San Benito is primarily a hay and grain county and it is only within recent years that fruit is coming to the fore as a rival with these products for supremacy in the commercial world. Climatic requirements for first grade hay are all fulfilled in San Benito County and the ideal summer, where foggy weather is the exception, enables San Benito County to rank second to no other section in California in the quality of hay produced. The product is sweet, rich and sun cured and often commands a bonus in hay markets. Hollister is the largest shipping point for hay in California and here the Lathrop Hay Company have the largest hay warehouses in the world, to and through which run railroad spurs from the main line tracks. These four, huge galvanized iron warehouses have a capacity of 19,500 tons and the shipping yard which is on private property, covers 27½ acres. The weights from their 50 ton car scales are accepted at all destinations except San Francisco and Oakland, where the rules of the trade require that the weight be taken by public weigher. All prices paid the farmer are f. o. b. warehouse for baled hay only, and during the rush seasons the many gigantic hoists mounted on poles throughout the yard are busy loading direct from the wagons into the cars for immediate shipment.

The Hollister Storage Co. is another large hay concern with capacity storage for at least 8,000 tons which it has no difficulty in finding a ready market in San Francisco, Oakland and other points.

Markets—

Twenty per cent of the hay shipped from the Hollister district goes to San Francisco and Oakland, eighty per cent to coast points and as far south as Los Angeles. Of late years large shipments have been moving to the Hawaiian and Philippine Islands. Owing to the fact that hay for these long ocean shipments must be compressed, the San Benito County output for these ports is handled through a San Francisco dealer equipped with compress plant.

Sections—

Throughout the entire county hay is one of the chief factors to con-

sider. It is said, when the land is good, fruit is planted; when the texture and humus content run below requirements, it is "hay land." The hill tops of the Bird Creek, Union District, San Juan, Santa Ana and San Felipe Valleys, Fairview, Pacheco Pass and the Hollister section in the San Benito Valley, produce the bulk of the hay crop.

Tres Pinos is also a large shipping point for hay and grain, with an average yearly shipment of 10,000 tons of hay and 3,000 tons of grain, relatively 70 per cent of which is barley, the balance wheat. This is drawn from all points south of Hollister, principally from the following valleys: Quien Sabe, Brown's, Upper Santa Ana, Paicines District, and still farther south from Bitterwater, San Benito, Hernandez, Panoche and Bear Valleys. The quality of the product is excellent and equals in every way the hay grown in the Hollister section and commands the highest market price. The capacity of the Tres Pinos warehouse of the Etcheverry Warehouse Company is about 10,000 tons for hay and 5,000 tons for grain.

San Benito County in a normal season produces one-fifth of the State's supply which is shipped from three shipping points—Hollister, Tres Pinos and Hudner—a flag station north of Hollister Valley. The output is handled by the Lathrop Hay Company and the Hollister Storage Company at Hollister and the Etcheverry Warehouse Company at Tres Pinos.

Varieties—

Wheat and oat, red oat, barley, barley and oat, alfalfa and the volunteer wild oat hay—the natural hay of the valleys—are the chief commercial balings. Alfalfa hay has a promising future in this section and it is favorably known all over the Coast for its splendid quality, having a fine stem and abundance of fluffy leaves possessing high nutritive qualities.

Output and Price—

From the following table it will be noted that the average shipment from the Hollister district for the past seven years, has been 17,611.2 tons per annum. This included 1913 which was a very poor year and short crop. For the five years prior to 1912, the average yearly shipment approximately about 24,130 tons. Following is the table of tonnage and average price to the farmer for hay for the past five years in the Hollister district; shipments from May 15th to May 15th:

Year	Tonnage Shipped	Price Per Ton
1912	28,450	\$14.00—\$17.00
1913	19,400	18.50— 20.00
1914	3,406	6.00— 9.00
1915	13,300	10.00— 13.00
1916	23,500	12.00— 15.00
1917	14,250	16.00— 20.00
1918	12,187	20.00— 23.00

About 3,000 tons of alfalfa hay were shipped from the 1916 crop and during the past three years the alfalfa acreage has trebled. Four crops are cut in the county on an average, beside furnishing pasturage. Average

price for the past five years to the farmer has been \$10.00 to \$11.00 per ton. Much is sold locally, loose, at \$2.00 per ton less than the current price for baled hay.

SUGAR BEETS

AUTHORITIES: John Welch, County Treasurer; George W. McConnell, County Assessor.

Extent and Sections—

San Juan Valley and the adobe lands in the San Felipe section are the chief localities where the growing of sugar beets has been extensively practiced. An increase of nearly 200 per cent in 1916 over the year previous shows the tendency toward beet raising in this county. In 1915, 4 cars of sugar beets left Hollister and the following year this jumped to 78 cars or 2,340 tons. Nearly three times this amount goes from Betabel, a spur from the mainline tracks near San Juan. In 1917 about 1,600 acres were planted to sugar beets in the county. In 1918 the acreage fell off owing to the small price offered.

Soil and Climate—

Sugar beets will, like all garden vegetables, do best on a rich sandy loam, but will thrive on a wide range of soils and some of the acreage throughout the county not fitted for other purposes than pasturage and poor grain crops, may be utilized for beet growing. On account of the late frosts prevalent, the plantings in this county are late. Sugar beets will tolerate a small amount of alkali and it is claimed by sugar beet growers in other parts of the State that the sugar beet reclaims many acres from alkali and fits the soil for the profitable cultivation of other crops after two or three years. About three years is considered the safe limit for continuous cropping to sugar beets without rotation, although some of the acreages in the San Juan Valley have been planted continuously for eight or nine years and are yielding as high tonnage as during the first three years.

Cost of Production—

Much of the crop is contracted to the Spreckels Sugar Company from land which is very low and wet and sometimes the crop is drowned out by the rising of the water table for a lengthy period. It is believed best that land planted to sugar beets should have previously been planted to other crops although raw land is sometimes used. It must be borne in mind that the costs given below are in the main higher than the actual expenditure, owing to the fact that most of the sugar beets grown in San Benito County are large acreages where large and high power farm implements are used at a cost proportionately less than that incumbent upon the small grower. Planting in rows, 20 inches apart, occurs in April. The ground is plowed very deep, at least 10 inches; three harrowings, field cultivation, dragging and ring rolling precede planting. About 12½ pounds of seed is needed per acre and a two horse drill is the common practice. At least one cultivation with a beet cultivator is necessary and the hand labor begins one month after planting. The cost of hand labor in the table below is based on an average crop of 12 tons to the acre, and will run about \$1.25 per ton or \$15 per acre. This includes thinning, hoeing and weeding at least twice, rowing up, topping

and loading. The hand labor in this section is chiefly Filipino, Hindoo, Japanese, Mexican or Cholo. Contract is made with a padrone or field boss who supplies his crew according to the acreage to be worked. For labor up to harvest time a daily rate is paid, while for topping and loading the laborers are paid by the acre on a sliding scale basis dependent upon the production. A good workman can usually make the prevalent daily wage when paid by the ton. The Japanese, while perhaps not the most thorough workmen, are the fastest and it is very interesting to note the elimination of wasted motion by a fast topper who, provided with a long knife with a hook on the end, reaches for a beet with the hook while his left hand is setting the decapitated beet on its head so that a large number may be gathered in handfuls by their tap roots, when loading. An expert topper can often handle 60 to 65 beets per minute.

The beets are thinned to 12 or 15 inches apart and the pulled young beets are often in demand for dairy cattle ration in nearby localities. The price received varies with the demand or the hay and ration shortage in that season. Plowing out is done with specially constructed plows and the Spreckels Sugar Company has devised and put on the acreages of many of their beet growers, farm implements especially adapted to meet the needs of cultivating and handling the crop. If the haul is over 3 miles from the nearest shipping point, the Company will allow a bonus of 50 cents per ton and will take care of any extra charges for hauling above 50 cents. The following then would about cover the cost of production:

Plowing	\$ 2.50
Three Harrowings	1.35
Field cultivation50
Dragging and ring rolling.....	.75
12½ pounds of seed at 16 cents per pound.....	2.00
Drilling50
One beet cultivator operation.....	.50
Hand labor for hoeing, thinning, weeding, rowing up, top- ping and loading at \$1.25 per ton per acre.....	15.00
Plowing out	2.00
Hauling, minimum three miles.....	.50

Total, not including interest, depreciation, taxes, etc.....\$25.60

Irrigation—

This will vary according to the rainfall and moisture of the soil, but at least one irrigation is usually given about two months after planting or a month to six weeks after thinning. The cost will run from \$2.50 for gravity water from the Irrigation Co., where obtainable, to \$3.50 for privately operated pumping plants.

Marketing, Yield and Selling Prices—

The grower is paid on a sugar content basis, the price for the past five years averaging \$5.25 per ton for beets containing 15 per cent sugar, with an advance of 35 cents per ton for every 1 per cent additional of sugar content. The Spreckels Sugar Company practically handles the entire crop of San Benito County, which has a 20 per cent sugar con-

tent average, for \$7.00 per ton. Although 12 tons is the average yield per acre throughout the county, some of the richer land of the San Juan Valley yield close to 16 to 20 tons per acre year after year, and less favorable sections of the county as low as 9 and 10 tons to the acre. To preserve soil fertility it is advisable to rotate for two years at least with some other crop after sugar beets have been grown for three years.

Profits—

Not including price of land, interest, taxes, depreciation, etc., and estimating on the average of 12 tons per acre yield, the gross returns will be \$84 per acre for 20 per cent beets; the cultural costs, \$25.60, which leaves a profit of \$58.40 per acre.

Disease, Pests and Hindrances—

So far San Benito County has been practically free from beet blight or curly top, which beet experts claim is caused by *Eutettix Tenella*, a leaf hopper, and which is more dangerous on lighter types of soils. It is said to run in cycles of 9 years. The crop in San Benito County was considerably affected several years ago but since that time the loss from blight has been negligible. *Aphis* during the extremely warm weather often threatens the crop and the best solution seems to be a quick harvest. The Spreckels Sugar Company has a corps of entomologists and plant disease experts constantly at work endeavoring to solve the eradication of various pests and diseases in many beet growing sections of the State.

By-Products—

Dried beet pulp, the remainder of the beet after the extraction of the sugar, is sacked. During the past five years it has proven a very valuable and highly nutritive feed for hogs and cattle, bringing about \$23 per ton. Pasture is often sold for about \$3.00 per acre after the beets are hauled off the field and the tops allowed to dry for about a week. This is very popular and profitable in the dairying sections of California where sugar beets are grown.

POTATOES AND TRUCK

AUTHORITIES: Charles Sans, John Dryden, Hollister.

Extent and Sections—

Along the banks of the San Benito River below its confluence with the Tres Pinos Creek and in the vicinity of Tres Pinos, the sedimentary bench lands are largely devoted to truck and potato growing. During normal years the yields are large enough to be satisfactory but a late season of frosts, like 1917, makes large imports necessary. The acreage in potatoes has dwindled during the past three years and the season of 1917 shows only about 80 acres against 100 last season. Lettuce of inferior quality, cauliflower in limited amount, some field peas and string beans late in bearing, tomatoes which are discussed on Page 66, Pink Eye, Canadian Wonder, and speckled cranberry beans, which in the past have been grown only on small experimental acreages, and excellent onions, parsnips, turnips and spinach, about comprise the vegetable crops of the county. Nearly every ranch raises its own vegetables. The San Juan Valley seems especially adapted to potato and truck production.

Soil and Climate—

Most of the loams found throughout the agricultural areas in San Benito County, when properly handled and irrigated will yield maximum returns in truck, although the late frosts make the commercial vegetable garden a hazard. Late plantings are advocated.

Potatoes, Culture and Production—

The Long Top Burbank has been found the most satisfactory for this section and about 520 pounds of seed are planted to the acre. The majority of the growers disinfect their seed with lime and water solution or 1 pint of formaldehyde to 30 gallons of water. The potatoes are plowed in about 4 inches, in rows 4 feet apart and spaced 15 inches apart between plants. The early plantings begin to come up in about a month, the late in three weeks and sometimes less. It has been found that the late plantings do much better and produce larger crops than the early plantings and this is therefore generally practiced throughout the county. The ground is flooded before planting and, as soon as sufficiently dry, intensive harrowing and cultivation is commenced. Weeding is constantly necessary especially in patches where a rich soil mulch is maintained and the rank growth appears almost over night. This is one of the largest items of expense. It is not the custom to hill the patches, so that when plowed out in the fall the ground is level. The yield for the Long Top Burbank is about three times that of the Short Top and averages about 200 sacks per acre. The White Rose was grown in this section some years ago but not planted during recent years as it produces a far smaller and inferior crop.

Pests, Hindrances and Diseases—

Dry rot and worms have not interfered with potato production in San Benito County although considerable damage is done by aphids. The growth is too rapid for the cutworm to get in effective work although some scab is found in various localities. No treatment or control measures have as yet been practiced.

Birds, gophers, and aphids may be said to constitute the chief pests for the truck gardener, here as elsewhere.

TOMATOES

AUTHORITIES: Frank Felice, Hollister Canning Company; W. C. Stroud, California Packing Corporation.

Extent and Sections—

Most of the land in the Hollister section and San Juan Valley is suitable for growing good crops of tomatoes. From 100 acres planted in 1916, this industry has grown to such an extent that it is worthy of a section in this booklet by itself.

A cannery was established that year and over 1200 acres have been planted this year. Another cannery has been proposed as many hundreds of tons are shipped away each year.

Cost and Methods of Production—

The seed is planted about the last of March in hotbeds. About 6 pounds of seed is sufficient for transplanting to nearly 150 acres. The young seedlings are taken from the hotbeds in about a month and a half,

and planted closely in rows in the ground where protection from frost and cold winds is afforded. They are put in at least 2½ inches below the surface and deeper if the soil is extremely light. Before the field is ready for planting, it is plowed twice, disced, cultivated and where necessary clod mashers and rollers are used to put the soil in a fine, well pulverized condition. The hills are laid 7 by 7 feet, and the final setting out takes place about a month after the first transplanting. The patch is cultivated about once a week until the vines are too big to permit further use of a machine, and at all times the weed growth must be kept down. The discing and cultivation will average about \$5.00 per acre, and putting the land in shape prior to planting at least \$6.00 per acre.

Disease, Pests and Hindrances—

Cutworms and aphids are troublesome and where too much water has been given or where the water table has stood too high, tomatoes manifest a dry rot that renders the crop unfit for use. No control measures for pests have as yet been necessary, as the gardening has largely been in the hands of Italians or Japanese who eradicate the cutworms by indefatigable hand labor.

Harvest and Selling—

The chief varieties grown are the San Jose Canner and Palma del Rosa or beefsteak tomato, which are large, solid and desirable not only for canning, but early in the season, for green shipment. They begin to ripen about the first of September and the larger part are sent out as green produce until the cannery picking begins about the 10th. They are picked into buckets which in turn are emptied into 50 pound lug boxes. The fruit should be picked without the stem and pickers who include the stem and tear down the vines are quickly dismissed. The patch is gone over once a week during the season and pickers receive 4 cents per 50 pound box. Most of the picking is contract labor and the cannery takes the entire crop where assistance has been rendered the grower by them in the matter of furnishing plants and boxes and advancing money to pay for cultivation. Most of the patches are on rented land. The yield averages about 13 tons per acre throughout the county. The cannery contracts at \$15.00 per ton, and furnishes the boxes.

Price of Land and Profits—

Land suitable for tomatoes runs to some of the best land in the county and is valued from \$200 to \$300 per acre. Rent acreages range from \$10 to \$14 per acre per year. The profits are variable according to the quality of the land, method of handling and crop.

CANNERY

AUTHORITY: Frank Felice, Manager Hollister Canning Co., Hollister.

Extent and Importance—

The Hollister Cannery represents an investment of about \$50,000, which includes a steam plant. The cannery provides the plants and furnishes the lug boxes for the tomato crop for which it contracts each season. It employs about 80 men and women throughout the canning season of about three months. The capacity of the plant is from 35,000 to 60,000 cases per season. This year this cannery is handling fruits also.

SEED RAISING

AUTHORITIES: Waldo Rohnert, Rohnert Seed Farm, San Felipe; T. M. Landrum, Manager C. C. Morse Seed Farm, San Juan; W. A. Johnson, Hollister.

Extent and Importance—

Seed growing is one of the most important industries of San Benito County, and throughout the San Juan and Hollister Valleys acres of orderly fields produce a wealth of seeds for domestic and foreign shipment. "It is a specialized industry and seed growers are yet groping in the dark," says Mr. Rohnert. "As a vocation it might cease tomorrow so much depends upon the reputation of the grower. One miscalculation and that most valuable requisite is lost forever. One man in a thousand is adapted to seed growing and it takes years of study and experimentation to build a reputation and a handful of poor seed to blast it forever. Working the soil in a small way is—shall we say—repulsive to the average American farmer. The entire hand manipulation of the seed farm is too slow for him.

"Business is done entirely upon the reputation of the grower. He sells not merely seed, but what the seed brings forth—it is not simply the final outcome of what the seed brings forth—but the quality of the vegetable or flower which comes from that seed. A vitality test is the selling basis; a special test for seeds used to produce seed. The great objection is that they are overgrown instead of undergrown. There is a large range of temperature and obstacles to overcome. Seeds of large vitality are bred to produce vegetables with small top and high color and quality, such as radish, beets and carrots. California grown seeds supply the demand all over the world. France is a large user of lettuce seed."

Sections—

Different sections are, as a rule, better suited to one variety of seed production than to another. Lettuce in the San Juan and San Felipe Districts. Cold in other sections is liable to give continuous growth and keep the lettuce maturing instead of heading for seed. Although onion and carrot seed may be produced here, better and surer results are obtained on the Sacramento River, where the warm nights produce the most favorable condition. Here, the onion in past years has been subject to mildew. Seeds of the cabbage or vine families are not raised either, the nights being too cold. The best land is perhaps in the San Juan Valley, although within the past two years many acres in the Fairview, Ausaymas and San Felipe sections have produced splendid crops of seed. It requires about two years of preparations to put the ground in condition for profitable and satisfactory crops. Flower seeds, with the exception of sweet peas, are negligible, for up to the present time they can be produced for less cost in Europe, as cheap labor to handle the crop is not obtainable here. Radish, lettuce, mustard, spinach, sweet peas, turnip, parsnip, endive, parsley and salsify with hundreds of their derivatives are grown in San Benito County. A farmer who has suitable

land and is individually adapted to seed growing is supplied with seed by one of the companies to whom he contracts his entire crop. Under their guidance and instructions he is encouraged in the production of seed.

Method of Production—

Until a few years ago, seed growing was almost entirely by hand labor and cost of production materially higher. Gangs of hand laborers, mostly Japanese, are supplied by a straw boss; several gangs with their boss are controlled by a head boss. Chinese labor is preferred by some, as more thorough and less expensive. \$2.50 per day is the minimum wage and the amount of labor necessary is dependent largely upon the season and rainfall. The seed farms are models of weedless neatness and accurate planting, seeming more like pictures of the ideal garden than an actuality. The constant ambition of the seed producer is to get the quality at the least expense. Several systems of labor employment are practiced by the various growers and the majority of machine labor is in the hands of Americans. Plowing is done by tractor and some of the cultivation and weeding by one and two horse machines, although at present the majority of this is hand labor. Every effort is being made and constant experiments with farm machines are under way to eliminate this necessity and cut expenses of production.

Little irrigation is practiced. Much of the land for seed growing is rented at \$15 to \$20 per acre per year.

Another peculiarity of this industry is the grower's necessity of working a year ahead and anticipating the market demands of filling up the "long wants." The crop is sometimes contracted two years in advance and it is necessary to anticipate the cost of production in order to make a profit while taking the burden of raising the crop as well as the cost of the crop. It may be understood the initial investment combined with tying up of moneys for the first two years, aside from the necessary loss by experimentation, is large and far beyond the possibility of the average farmer. When seed is raised by the individual for the seed companies, he is paid on the poundage basis, all cleaning being done at the company's mill.

About 600 pounds of lettuce, 400 pounds of onion and 800 pounds of radish seed are considered yields per acre. Only certain types of sub-irrigated soils are applicable for satisfactory seed production.

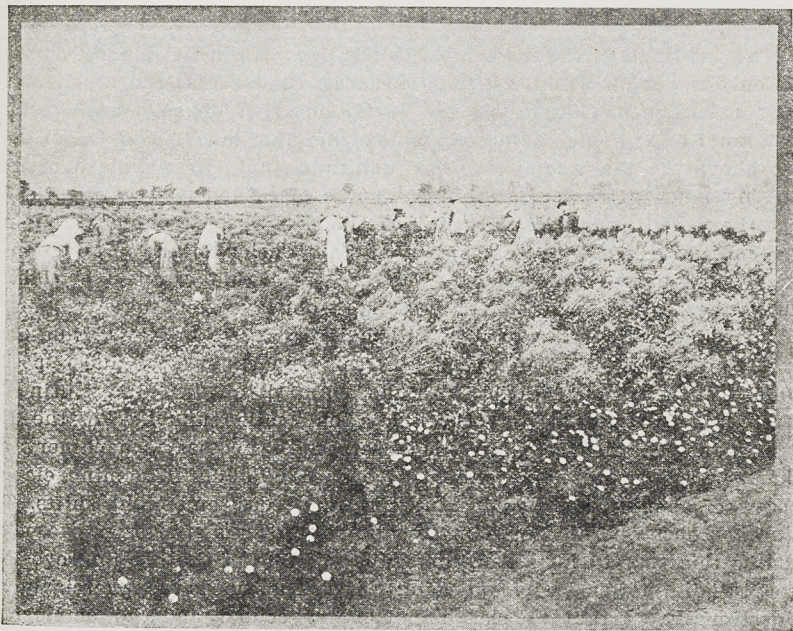
Harvest—

Sweet peas are mowed, put on canvas sheets to dry and threshed, run through field cleaners and also cleaned with special machinery. Packing is in seamless, cotton sacks holding about 150 pounds of radish, 175 pounds of sweet peas and other lighter seeds. During four months of the year the seed cleaning machines run full time and half the night to get the crops cleaned as they are harvested. There were in 1918, about 8,500 to 10,000 acres devoted to seed raising in the county by the following concerns: C. C. Morse & Co., Waldo Rohnert, Calif. Seed Growers' Ass'n., Braslan Seed Growers' Co., and Pieters-Wheeler Seed Company.

Hindrances and Pests—

Aphis is very troublesome and to aid in the destruction of the dreaded cutworm, the blackbirds are encouraged and much eradication effected by hand, at large expense. Mildew is another drawback, especially in the onion family.

The vastness of the industry and the huge equipment necessary to produce in quantities sufficient for profit must be seen to be understood. The traveler through the county will obtain an indelible impression of the magnitude of the industry along every valley road. The small producer has no chance except when helped to proper cultural methods and under the direct supervision of one of the seed houses. Constant inspection of the experiment patches, where new blood is continually being tried out, is but a small part of the seed grower's duties and the fields are personally inspected by experts at least four times during the growing season.



SCENE ON A SAN BENITO COUNTY SEED FARM

MINING INDUSTRY

AUTHORITIES: H. W. Gould, General Manager New Idria Mining Co., Idria; J. M. Mocine, Idria; Geo. W. McConnell, County Assessor, San Benito County; Report of State Mining Bureau, San Francisco, Cal.

Extent and Importance—

The most important mining interest in San Benito County is the quicksilver deposits. Cinnabar is encountered in many places throughout the eastern range of the county with the principal workings at the New Idria Mines. Other mineral resources are magnesite, dolomite, brick, manganese, lime rock, antimony, bituminous rock, chromite, granite rock, gypsum, gems, mineral water, soapstone, and miscellaneous stone, with coal of inferior quality. Many of these are yet undeveloped. Cement material next to quicksilver, is important and is obtainable near San Juan in large quantities and comparatively high quality. The Old Mission Portland Cement Company has installed the last of its improvements and machinery and has commenced extensive operations.

New Idria Mines—

The holdings of the New Idria Quicksilver Mining Company comprise not only the main camp with its furnaces, condensers, ore crushers and other extensive machinery at New Idria, but rich deposits and workings at Camp No. 2, some 1,000 feet above and the San Carlos Camp 2,500 feet above the main camp on the mountain top. In the days of early working much of the ore at this camp was discarded as unprofitable, but with the modern and more effective methods of the present day, it is now possible to utilize the dump piles at San Carlos in the production of large quantities of quicksilver. The ore from this camp is brought to the crushers at the main plant by aerial tramway extending over some 2 miles of steel cable and equipped with half ton steel buckets. From Camp No. 2 the ore is dropped in a chute from the camp level and deposited 1,000 feet below on a level with the main plant. Ore cars bring the rough stone to the graders through a half mile tunnel. At the New Idria plant the furnaces and condensers with necessary machinery and laboratory represent an investment of over \$250,000. The mine employs a crew of about 450 men constantly, working day and night shifts. This mine has been operated without cessation for over sixty years, except two months this year to install new machinery. One of the big improvements is a 40-mile power line from King City. The needs commercially and educationally warrant the large elementary school and the employment of two teachers, as well as the most thoroughly stocked general refrigerating and hydro-electric plants. The majority of the permanent laborers and foremen are French or Spanish-Basque—most satisfactory and conscientious workmen.

Next to fruit and cattle, quicksilver mining is the most important industry in San Benito County.

The Aurora Quicksilver Mine is situated between Camp No. 2 and the

San Carlos workings of the New Idria chain but has not been operated for many years.

During 1916, 10,828 flasks of quicksilver were shipped from the New Idria Mine and the output of cinnabar ore approximated 160,000 tons.

OLD MISSION PORTLAND CEMENT COMPANY AT SAN JUAN

The property of this company comprises of 2,460 acres and the railroad line from Chittenden on the S. P. Coast line over which materials will be distributed and the output shipped. Not only does this line of lime follow the entire length of the company's holdings, but continues throughout much of the private property through the Cienega District, insuring ample supply of cement materials for the next century at least. At Chittenden may be obtained the clay which forms the main constituents of high grade cement and where there are splendid indications of fuel oil being developed for working the furnaces and machinery. About 100 men are working at the new plant.

Granite Quarries—

Granite quarries exist in San Benito County in the west range of hills and further south than the cement outcroppings. The Granite Rock Company, owned mostly by Watsonville capitalists, has been utilized to supply the Southern Pacific Company and neighboring counties with crushed rock for road ballast and macadam for road making purposes.

HOLLISTER VALLEY

AUTHORITIES: Geo. W. McConnell, Ex-President San Benito County Chamber of Commerce; H. H. Whitmore, Secretary San Benito County Chamber of Commerce; John Welch, County Treasurer; Geo. W. McConnell, County Assessor; T. S. Hawkins, President Bank of Italy, Hollister Branch; George W. Justice, Chief Deputy Assessor; E. E. Holbrook, Hollister.

Location and Topography—

The Hollister Valley is topographically the southern end of the Santa Clara Valley. It slopes towards the north and is drained throughout its southern half by the Tres Pinos Creek and the San Benito River which converge 2 miles west of Tres Pinos. The sedimentary benches along these streams provide some of the richest soil in this section although the depth and richness of the soil throughout the entire Hollister Valley is prodigious. The southern end of the valley is gently rolling mostly devoted to hay and grain with orchards on the more level ground. Toward the town of Hollister one encounters what is known as the Enterprise District, mostly devoted to orchards, and lying among the rolling hills to the east the grain, hay and vast pastures of the Santa Ana District. Circling the valley toward the north you arrive in the Ausaymas District which within the past ten years has been widely planted to orchards and seed. The San Felipe District on the north, separating Santa Clara from San Benito County at the base of the hills, is the dairying center of the county and from here also come some of the finest blooded horses, both draft and trotting stock. To the north of Hollister lies the Bolsa through which Henry Miller of the Miller Rancho, cut a drainage canal some twenty years ago in hopes of reclaiming the rich, heavy lands lying southeast of Soap Lake in the San Felipe District, from the poor and unusable condition in which they were found every winter and spring by reason of the rise of ground waters, often completely covering many acres. This section is chiefly devoted to pasturage although some of the higher and better drained sections are sown to alfalfa, hay and grain. The largest orchard acreage in the county stretches out from all sides of the town of Hollister and during blossoming time the billows of pink and white blooms extending in every direction from the stately court house, in the centre of the town, is most imposing. The Union District lies across the river to the southwest of Hollister, extending from the river bank back into the rolling hills of the Bird Creek District. Here are orchards, potato and berry patches, poultry farms and towards the hills acres of grain and hay. The Hollister Valley is about 15 miles long from north to south, and 7 miles at its widest.

Soils—

The soils of the Hollister Valley range from the most light and powdery of sedimentary loams found along the bench lands of the rivers and

creeks, through the loams and clays, sands and gravels of the orchard and pasturage tracts to the heavy "adobe." They are almost without exception very deep and rich and aside from the nominal rainfall of about 15.1 inches per year, many water bearing gravels are encountered and the water table especially in the northern end of the valley is seldom below 10 feet of the surface. The sedimentary soils are sometimes from 20 to 35 feet in depth and only on the east side of Hollister is encountered what is commonly termed hardpan, but which in truth is a clay sub-soil at depths varying from 1½ to 3 feet. In spots this is quite compact, in others pervious to plant roots. Although condemned by oldtimers, young orchards on this tract have done well and prejudice against soil of this character is waning with the measure of success enjoyed.

Products and Land Values—

In order to do full justice to the products, irrigation facilities and values of the various sections comprising the Hollister Valley, we will take them in the order of circling the valley from the north around the east side, etc., completing the circle at the logical center, Hollister.

SAN FELIPE DISTRICT

AUTHORITIES: F. M. Frazell, San Felipe; A. G. Turner, Dunneville.

Description and Topography—

The chief output from this dairying section of the county is Cheese, although some milk is sold to the creamery or condensery in Hollister. Beef cattle and draft horses have made an enviable reputation for this district and the grazing ranges of the Dunne Estate, Pacheco Cattle Company and other neighboring stock ranches include some of the finest grazing land found throughout the length and breadth of the county, upon which immense herds of high grade beef cattle feed throughout the year. The major portion of the Dunne ranch lies just over the line in Santa Clara County, and its herd, although a grade brought up by purebred sires, is considered by many stockmen to be one of the best in the State and shipments of young stock have recently been made to distant cities and the Hawaiian Islands. Fine draft and a few blooded trotting horses have for many years sustained the reputation of this district as being one of the notable stock breeding sections of the county.

Most of the dairies are milking but one string and these for the larger part are grades, with a sprinkling of purebred cattle. Grain hay and some barley is raised with alfalfa fast becoming more important. Sugar beets are extensively grown.

The soils run from sandy loams to heavy clays on the level stretches, while the hills are sandy or gravelly loam with a distinct gravel or rock substrata not more than 5 feet below the surface. Through this section an artesian belt is encountered and when alfalfa, fruit or truck crops are grown, irrigation is from these wells or by pump from wells bored to depths varying from 15 to 30 feet. Not many of the artesian wells are of sufficient volume to flow constantly without the aid of a pump. The district is drained by Pacheco Creek which flows west from the Ausaymas district and the Pajaro River into Soap Lake.

The Rohnert Seed Farm is situated at Dunneville and its spacious warehouses give an idea of the immensity of this industry.

DUNNEVILLE

Here in addition to the Rohnert's Seed Farm is located a garage, inn and blacksmith shop and Frazell's cheese factory is one mile west.

Land Values—

Land in the valley is valued at \$300 to \$500 per acre, while the grazing land of the hills is held at from \$20 to \$30 per acre.

AUSAYMAS

AUTHORITIES: C. N. Hawkins, W. E. Wilson, Hollister.

Description and Topography—

The Ausaymas District lies about 7 miles north of Hollister with a drop of about 7 feet to the mile in a southerly direction following the Pacheco Creek which skirts the hills, turning southwest through the San Felipe District. Some orchardists irrigate by damming the creek but the majority pump from wells, the best of which are sunk in the bed of the creek from 60 to 100 feet to insure constant flow when needed. The soils along the bank of the Creek are a fine sedimentary loam very deep and without indication of any impervious or rocky substrata. These shade back from the creek into gravelly loams and heavier clays. Many acres of orchards have been planted during the past three years and this promises to be one of the most prosperous and important orchard districts in the county. A few years ago some of the land along the bank of the creek was planted to seed, experimentally, and this has proved so successful that many acres, formerly yielding only barley, have this year been put in seeds. Barley and cattle are also sent out of this district but its chief importance lies in its fruit shipments, from some of the largest individually owned fruit acreages in the county.

Land values run from \$300 to \$500 and these are increasing with the growing importance of the district. Pasture land is worth from \$35 to \$40 per acre, most of which belongs to the Pacheco Cattle Company, whose extensive holdings extend over the rolling hills on the southeast to and beyond the Merced-Santa Clara-San Benito County boundaries. Here are some of the finest shorthorn cattle in the State.

FAIRVIEW

AUTHORITIES: Walter Flint, Wm. Dooling, Hollister.

Description and Topography—

Most of this section has soil of great depth and richness, running from sandy loam to clay loam and the principal crops are fruit, seeds, hay, grain and tomatoes. The acreage devoted to seed raising for the California Seed Company are situated in this district and recent large plantings to pear, apricot and prune orchards will in a few years make it a very rich and prominent section of the county. Land values run from \$200 to \$500 per acre. Irrigation is from pumps.

BOLSA

AUTHORITIES: George W. McConnell, Hollister; Jos. Herbert, Hollister.

Description and Topography—

Although the soil of this section is rich, the high water table, poor drainage and alkali in places have hindered the progress of the Bolsa as an agricultural district; but of late years it has come to the front and is

now one of the most rapidly improving sections of the county. Along the hills on the west side of the valley are many fine ranches, mostly devoted to dairying, grain and hay, with some acreage in fruit. One of the largest and best equipped dairies in the State is situated on the western foot-hill road a few miles northwest of Hollister.

Most of the hay and grain is shipped from Hudner, a flag station on the S. P. Railroad. It may be roughly estimated, however, that the larger part of this section is devoted to pasture lands, seeds and alfalfa. The latter, during the past few years, has been grown extensively and some very heavy returns have been enjoyed. The cost of irrigation is lower than in other sections of the county owing to higher ground water. The shortest road out of the county to Gilroy and the Santa Clara Valley runs through this section, although during the winter months it is impassable, due to the heavy character of the soil and the lack of proper drainage. Now the supervisors are preparing to macadamize this road in the same manner as has been done with the other main highways in the county.

Land Values—

Orchard lands in this district are worth from \$200 to \$300 per acre, with pasture lands bringing from \$30 to \$50 per acre.

SANTA ANA VALLEY

AUTHORITIES: Ras. Neilson, Carl Sperber, Hollister.

Location and Topography—

The Santa Ana Valley lies about 5 miles east of Hollister. The soils are very regular in character, deep and rich, mostly of fine sandy loam suitable for the production of nearly any field and orchard crop. It is drained by Santa Ana Creek which flows northwest into Soap or San Felipe Lake. What little irrigation is practiced comes from wells, as does the domestic supply, and there are at the present time about four pumping plants in the valley.

Sugar beets, seed, barley and fruit with hay from the rolling hills, are the principal products.

Land Values—

Raw land mostly of level character and productive mostly of fruit, hay and pasture sells for \$30 to \$40 per acre.

UNION

AUTHORITIES: Charles Sans, Peter Friis, Hollister.

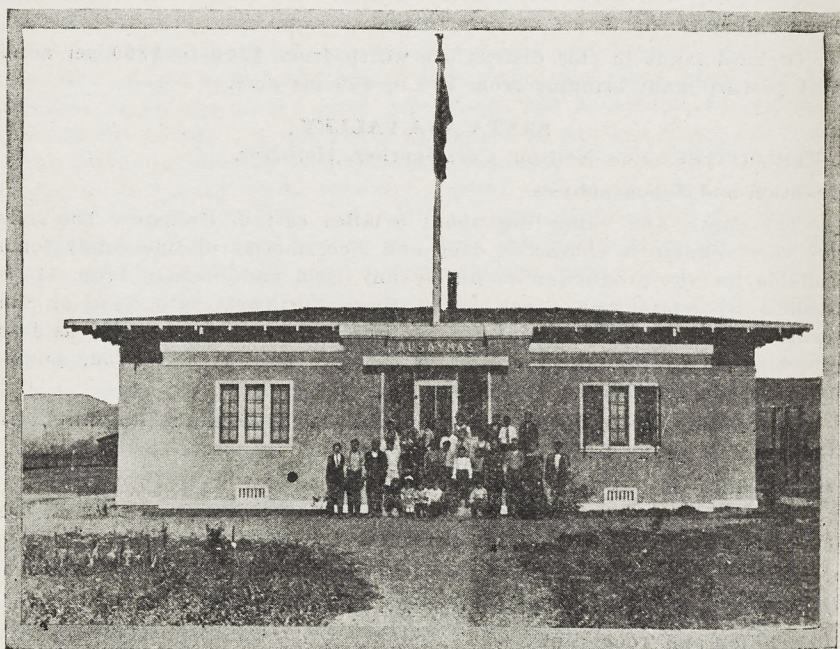
Description and Topography—

This is considered one of the richest fruit and truck raising sections in the county. The deep, rich, sedimentary loams along the west bank of the San Benito River produce some of the largest yields in both these crop divisions enjoyed anywhere in the county. Potatoes, berries and tomatoes are other of the special crops to which this section seems well adapted. Irrigation is by gravity ditch system and from private pumping plants, or both. Poultry and eggs play their part in making this one of the most commercially important sections. About a mile back from the river the country becomes more rolling and is devoted mostly to hay and grain, although during recent years many orchards have been plant-

ed on hillside land which formerly was condemned as unsuitable for little else beside field crops. Bench lands seem especially protected. Valley lands here are thickly settled in small holdings.

Land Values—

Valley land is worth \$300 to \$500 per acre and the hill land \$25 to \$50 per acre.



AUSAYMAS SCHOOL, showing the type of modern rural school buildings that are being built in San Benito County in recent years.

HOLLISTER

History and Description—

The early history of the town of Hollister is unique and no better description of its creation could be given than that contained in "Some Recollections of a Busy Life," by Thomas S. Hawkins, who started from the Merrimac River in a prairie schooner in 1680. "In the fall of 1868 I assisted in the formation of the San Justo Homestead Association, a corporation composed of fifty farmers, holding one share each. We purchased from Colonel W. W. Hollister the western part of the San Justo Rancho, (now the southern end of the Hollister Valley,) containing 21,000 acres for the sum of \$400,000. Each of us paid in \$2,000, making the first payment of \$100,000. We then divided the best part of the ranch into fifty homestead lots, being one for each member. We reserved in the center of the tract 100 acres for a townsite, laying the same off into blocks and lots. This 100 acres is now in the center of the town of Hollister.

"As all of the homestead lots were not of equal value we determined to bid for first choice and so on, until we had each secured a lot. In October we held an auction and first choice was awarded to me on a bid of \$4,500 premium and of course I selected the lot that suited my fancy. The amount bid in premiums amounted to about \$100,000, which of course, went towards paying off the balance due on the purchase price. Colonel Hollister, a pioneer of the State and one of the noblest men I ever knew, came to California and in conjunction with Thomas and Benjamin Flint, brought almost, if not the first sheep ever driven across the continent. They became owners of the large Spanish grant known as the San Justo, which afterwards was divided. Flint, Bixby and Company took the western portion and Colonel Hollister the eastern, which we purchased."

From this interesting beginning the town of Hollister and the neighboring section has grown in importance and prosperity until it is known widely for its prunes, apricots and peaches. Poultry and eggs are important commercial assets and lime rock from other sections are shipped from Hollister which is the nearest railway point. The coming of the railroad opened possibilities of transportation for other products than the hay, grain and cattle which were formerly hauled and driven to Alviso, 60 miles distant, for shipment by boat to San Francisco. Today three trains each way over the Hollister-Tres Pinos branch of the S. P. R. R. give sufficient transportation and freights ply busily between this point and Bay centers; eastern shipments being consigned directly from this terminal tariff station.

County Seat—

Hollister, the County Seat, has a population of about 3,000 with every modern convenience for the homeseeker. A thriving, conservative little town where the educational, religious and social life is well repre-

sented, Hollister shows her visitors prosperous and modernly equipped shops, markets and places of amusement. Lumber yards, two cement pipe manufactories, a cannery and packing house, the largest hay warehouses in the world, granaries, a milk condensery, stock yards and many small manufacturers are represented. The streets are broad and well paved. Electricity, cooking and illuminating gas bring the acme of conveniences to the housewife. The water system, not only for domestic purposes but for fire emergency, is ample and of high pressure and of undeniable purity. A modern electrolier lighting system is now being installed.

Public Buildings, Improvements—

The Court House with the beautiful Hall of Records on the west side flanked by the County Jail on the north, stands in an imposing park. The Court House was built in 1887 and the present Hall of Records was completed in 1913. The Hall of Records represents an expenditure of \$33,000 including furniture and fixtures. It is constructed entirely of reinforced concrete and no wood or inflammable material is used in its finishing. The doors, window frames and furniture are of steel with wire reinforcements blown in the glass of its windows. It is separated from the Court House by a passage way through an enclosed corridor spanning the 40 feet between the two buildings.

The Public Library and Hazel Hawkins Memorial Hospital are two public buildings which would attract the eye of any visitor by their beauty of architecture. The Carnegie Library completed in 1913, is provided with about 3,620 volumes and a regular librarian and assistant. The Memorial Hospital was completed in 1907 and deeded to the people of the County of San Benito under a board of seven trustees by T. S. Hawkins. It is an imposing structure of cream colored brick with trimmings of terra cotta and represents complete an expenditure of \$60,000. It is provided with two operating rooms and all the appliances and conveniences medical science can desire for the care and treatment of patients. Being the only up to date hospital in the county it is usually taxed to its capacity, drawing its patients not only from the towns but the ranch and farming sections as well.

Hollister may well be said to be a garden town, ornamentally and practically. The majority of the town lots are large and many homes maintain vegetable gardens as well as a multi-colored riot of blossoms. The homes are some of them pretentious but all picturesque, and many poultry yards may be found on the outskirts of town, furnishing profitable employment and support when combined with a small fruit acreage.

Social, Literary and Commercial Life—

The Hollister Woman's Club, Red Cross, Literary Society, Idle Hour Club, several social organizations and women's auxiliaries to the various fraternal orders which are represented in the town, promote civic improvement and otherwise aid and instruct according to their various objects.

The medical and dental professions, as well as those of the law and trades are represented by men high in their calling.

Two good hotels, poolrooms, several restaurants and numerous board-

ing and lodging houses take care of the traveler from any walk of life. A fine theatre with seating capacity of 700, a movie house and a skating rink offer recreation to the pleasure seeker.

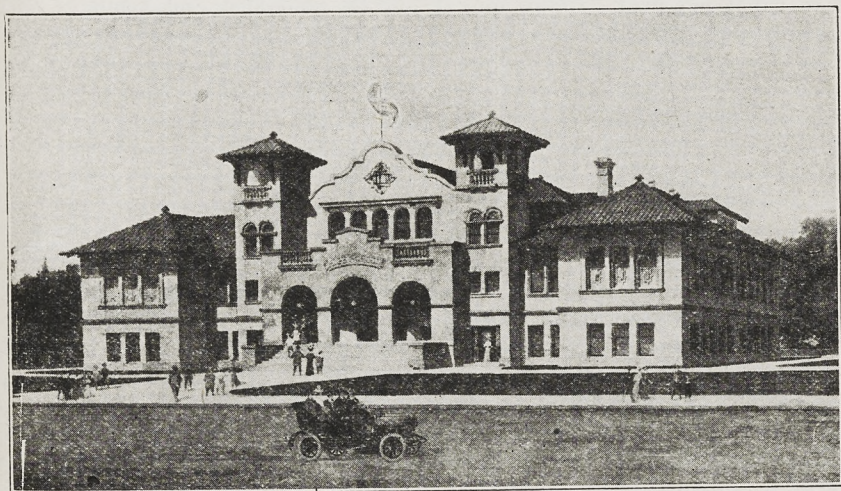
West and southwest of town is the chief poultry district of the county.

Roads—

Hollister connects with the main State Highway at San Juan on a lateral 8 miles long.

Hollister will also connect with the Pacheco Pass Highway by a lateral 8 miles long, thus connecting with the great interior valley.

San Benito County compared with other central California counties, has every reason to be proud of her roads, and those radiating from the county seat are naturally the most effectively kept up, and, as there is an automobile to every 8 people in San Benito County, the highways and county roads present at all times a scene of much activity. The county is fully awake to the advantages and commercial importance of good road building and within the past few years has seen the once isolated ranch, which formerly sent little or nothing to the commercial markets except such stock as might be driven to a shipping point, come into prominence and close community touch and sympathy with the rest of the county over the "white ribbon of progress,"—the good road. And she has not stopped building, nor is she going to until every resource of her native wealth is tapped and connected with the county seat by throbbing arteries of travel.



SAN BENITO COUNTY HIGH SCHOOL, HOLLISTER

SAN JUAN VALLEY

AUTHORITIES: George Abbe, Mayor of San Juan; Frank Abbe and Mark Regan, San Juan; Richard Flint, San Juan.

Location and Topography—

The San Juan Valley is an absolutely level stretch of intensely fertile and rich land, situated in the extreme northwestern corner of San Benito County. It extends from northwest to southwest about 11 miles with an average width at the widest part of 3 miles. Separated from the southern end of the Santa Clara Valley only by a few rolling hills, through which the State Highway cuts following the natural pass at Sargent's station, it is only eight miles west of Hollister and separated from that section by the San Benito River and a cleft in a hill spur which forms a natural gateway. The San Benito River flows along the entire northern side hugging the hills and empties into the Pajaro River at Betabel, in the northwestern corner of the valley.

Soil and Climate—

The floor of the valley comprises about 9,000 acres of some of the richest land in the county. This runs from the ashy sedimentary loams to heaviest clay, or "adobe." All are deep and extremely rich. No trace of hardpan is existant and the small amount of alkali found only in one section where the drainage is poor, is negligible. This section by a drainage canal not over 3 miles long could be reclaimed and rendered very productive. The San Juan Valley is about ten degrees cooler in summer than the Hollister section and enjoys a rainfall, covering a period of the past 10 years, of about 18 inches yearly. This increases the further out in the valley one goes and in the hill lands the amount is proportionately more. The crop season here is later than in other parts of the State and when the produce from earlier sections are drying up, San Juan Valley is shipping her best.

Irrigation and Products—

Irrigation is by private pumping plants, the majority of which are gasoline. Elaborate systems of flume and movable casing are used to convey the water to the further parts of berry and truck farms. Water is encountered in unlimited amounts at depths varying from 15 to 110 feet. A strong, unfailing artesian belt is encountered running from about opposite the town of San Juan almost to the river. This is nearly $1\frac{1}{2}$ miles long by $\frac{1}{2}$ mile wide and some of the wells show a rise of 30 feet through pipe above the ground. The chief products of the San Juan Valley are prunes, apricots, pears, apples, almonds and walnuts, seed, sugar beets, grain and hay, alfalfa which is becoming more important yearly and about 50 acres of truck gardens which supply their share of the demand from Hollister, Salinas, Santa Cruz, Watsonville and San Jose. From about the center of the valley north, the country is largely devoted to strawberry patches and the yields and length of season are truly remarkable. Most of the old orchards are on the hillsides and in little

sheltered spots of small acreages, nestling among the hills which surround the valley on the west and south.

Several dairies contribute their quota of cream for shipment to Santa Cruz and San Jose.

Land Values—

Valley land unimproved is often sold for \$400 per acre when obtainable. Hill land suitable for orchards is valued at \$50 to \$125 per acre. The amount of range land properly tributary to the San Juan Valley is very small, and all individually owned.

Transportation and Roads—

With the completion of the S. P. branch to Hollister, one of the long established and most picturesque factors which has helped for fifty years to build up the San Juan Valley passed out by the discontinuance of the Concord four-horse stage which for many years had carried the mail, freight and passengers from Sargent's station after the completion of the Coast line of the S. P. to Hollister and San Juan town. In its place is a high power motor bus which meets the six daily trains at Sargents and conveys passengers to the destination of the old coach route. Four stages each way daily pass through San Juan direct from Hollister to San Jose and way points, as does the daily stage from Hollister to Salinas.

The State Highway runs through the town of San Juan on its way over the Scenic San Juan grade, once the despair of the motorist before the 6 per cent grade of the new survey made ascent easy. The State Highway lateral connects San Juan with Hollister, eight miles to the east and good roads radiate from the town to all tributary points in the valley and hills.

Near the town of San Juan is the Old Mission Portland Cement Works which is connected with the S. P. mainline with a spur running to Chittenden Station.

It is anticipated that transportation for freight and passengers will be assured this community over this system in the near future.

San Juan Bautista, for this is its post-office name, is a steadily growing, with an estimated population of about 700. It has 3 good hotels, 3 workingmen's hotels, several large and fully stocked general merchandise stores, 2 garages, 3 oil and motor supply stations, blacksmith shop, lumber yards, pool halls, drug store, barber shop, etc.

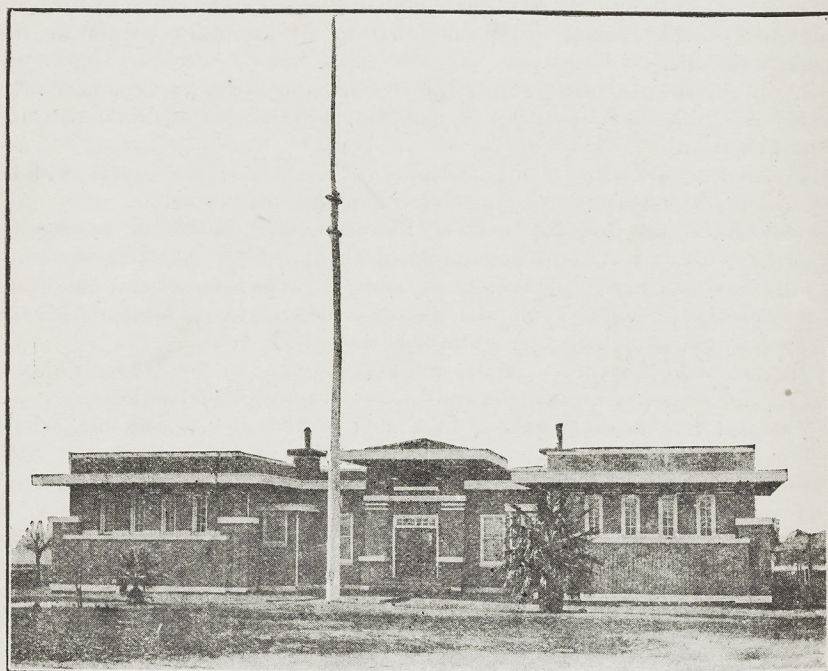
A \$12,000 elementary school building of which the town is justly proud and churches of two denominations are also situated here.

Betabel is a loading station on a spur of the S. P. Coast line, where a beet sugar loading platform and scales have made it important agriculturally during the harvest season.

Aromas cannot rightly be said to belong in the San Juan Valley, as it lies off to the west in the rolling hills. It is, however, tributary to San Juan for amusements and community interests. It is a little town of about 150 people on the Coast line of the Southern Pacific R. R. and during the past few years is becoming more important as the shipping point of an increasing fruit acreage, mostly apricots. Here are found school, stores and other establishments to supply the townspeople and neighboring ranches.



SAN JUAN GRAMMAR SCHOOL, SAN JUAN



TRES PINOS UNION SCHOOL, TRES PINOS

TRES PINOS

AUTHORITIES: John Etcheverry, Supervisor San Benito County, James Slaven, Manager Etcheverry Warehouse Co., J. M. Leonard, Tres Pinos.

Location and Topography—

What is known as the Tres Pinos section, with the town of Tres Pinos as its commercial center, commences some five miles south of Hollister and embraces several grain and orchard districts situated in the small valleys and along the banks of the San Benito and Tres Pinos Creeks and includes the Santa Ana, Santa Anita, and Quien Sabe Valleys, lying to the east. The section is mostly composed of gently rolling hills and sheltered valleys of small areas, on which the principal agricultural efforts are made toward alfalfa, fruit and garden raising. The Tres Pinos section is drained and watered by both the Tres Pinos and San Benito Rivers, which unite a few miles south of Hollister. On the east the country becomes more rugged and the mountain sides are suitable only for range. The Quien Sabe Valley is drained by the Los Muertos Creek.

Soils and Products—

The best soils are found along the river benches, deep, well aereated loams of great depth. Here are grown fruit and recently small truck acreage has demonstrated the richness of the soil in these localities. This type of soil is limited but capable of maximum returns under intensive and proper handling. Throughout the rolling hills the textures run from sandy and gravelly loams, through the clay loams and in some small areas, to the heaviest adobe. A gravelly substrata is encountered throughout the rolling hill land at a depth of from 1 to 5 feet. This is often combined with heavy clay and is termed hardpan, by the residents, although no true hardpan exists, and it has been demonstrated that tree roots will of themselves penetrate and the trees thrive. The soils of the mountains are largely decomposed granite and limestone formation, lacking in humus and underlaid at a few inches with gravel and rock outcroppings. Here wild grasses and the hardier volunteer forage plants alone survive and these areas are devoted to stock range for the big herds of beef cattle, horses and flocks of sheep which have made the section important and famous for fifty years. The ranches throughout this district are large, for nearly every ranch raises the necessary feed for its many head of horses as well as vegetables, fruit and other supplies for the family. Of later years much planting to pear, apricot, and prune trees has swelled the shipments from Tres Pinos to creditable proportions. Over many of the small hills along the San Benito River, vineyards are found and wine making is one of the industries of the section.

Grain hay, barley, dried prunes and cots, sugar beets, green pears for the San Jose canneries, beef, horses, sheep and hogs are the principal

commodities shipped, from the tributary sections as far south as San Benito. Poultry and eggs are rapidly becoming important also.

Irrigation—

Except from the irrigation canals which flow along the west side of the Tres Pinos Section, irrigation is from wells by pumps. Inasmuch as most of the farming is for grain and hay, little effort has been made to put water on the soil, although encountered by borings for domestic and stock wells at a depth of 30 to 100 feet. Springs in the mountain canyons supply water for much of the stock range and are generally piped a few hundred feet into spacious troughs.

Towns—

Tres Pinos is a thriving little town of about 500 inhabitants within a 5 mile radius, and its two general merchandise stores flourish on the patronage of the tributary farming sections. Here are located huge hay and grain warehouses, 2 blacksmith shops and welding works, garage, 2 hotels, pumping establishment, lumber yard, and pool halls. It is also the terminus of the Tres Pinos branch of the S. P. Company and enjoys terminal rates on east bound freight.

Two fraternal orders are represented and a Catholic church and elementary school are situated here. The professions are not represented of late years, owing to the splendid condition of the roads the residents patronize Hollister physicians, dentists and lawyers. An automobile conveys pupils to the County High School at Hollister from Tres Pinos and outlying districts during the school term.

Roads and Transportation—

Stages for New Idria tri-weekly and the San Benito Valley points daily leave this thriving town. Three passenger trains each way, daily accommodate the traveler, and good roads render motor or wagon travel genuine pleasure throughout even the mountain districts.

Land Values—

Valley land unimproved is worth \$200 per acre and bearing orchards \$500 to \$900 per acre. Rolling hill land may be purchased for \$40 to \$50 per acre and range land for about \$15 per acre of which it is necessary to allow 10 to 15 acres grazing range per head, depending upon the season's feed and rainfall.

Some of the large landholders rent pasturage or lease on a long term of years for ranch houses, barns, etc., usually manipulating on a share basis.

PAICINES

Four miles south of Tres Pinos and eleven miles south of Hollister is a thriving trading center, Paicines. Here the main road to the southern part of the county divides, one road going to San Benito and Bitterwater and the other to Panoche and Idria.

At Paicines is situated a good hotel, garage, oil station, general merchandise store and school. San Benito, which is further south is similarly equipped.

A mile and a half south of Paicines is the entrance to the Paicines Rancho, one of the most beautifully situated and largest ranches in central California. Here are raised large herds of purebred Shorthorn cattle and the surrounding hills are stocked with Chinese pheasants and mountain quail from the extensive brood yards of the owners. The ranch buildings, from dwelling to stables, attain the highest state of architectural perfection and equipment. This ranch employs over thirty men continually, many of whom are married and whose families reside in cozy cottages on the Rancho. Splendid crops of alfalfa are raised on this property, effectually demonstrating the possibility of successful yields in this section. In addition new agricultural experiment are constantly practiced and logical and profitable methods adopted for use in increasing the Rancho's yields. Some of the highest grain and hay crop yields have been obtained on this property and all the feed necessary for the immense herds during the winter months is raised on the ranch.

Land Values—

The holdings run large throughout the entire section, south to the County line, mostly around 1,000 acres or more to each landowner. Valley land is valued at about \$25 to \$30 per acre and grazing and hill land around \$10 per acre.

BEAR VALLEY

AUTHORITIES: Schuyler C. Hain, Tres Pinos; H. G. Bacon, Cook.

Location and Topography—

Bear Valley is situated in the mountains 26 and 19 miles south of Hollister and Tres Pinos, respectively, at an altitude of about 1,250 feet. The floor of the valley extends 6 miles with an average width of 2 miles in a southwesterly direction, with a drop of 10-50 feet to the mile. It is watered and drained throughout the entire length by the Bear Valley Creek which flows southwest into the Chalone Creek near the "Pinnacles." The valley floor is gently rolling and the surrounding hills affords excellent pasture during the spring and early summer months. The soils are greatly spotted in small areas, ranging from heavy adobe to sand and gravel, but mostly of a gravelly and sandy loam. Bear Valley is important not only as a farming section, but as the point from which travelers may enter the "Pinnacles." Here several of the farmers provide stopping place and horses and act as guides through the baffling labyrinths of the caves and gorges. Water is encountered from 2 to 6 feet below the surface and irrigation is by pump either from the creek or wells. Domestic water supply is from wells 15 to 20 feet deep.

Products—

A few family orchards bear a delicious quality of fruit and recently small shipments of blackberries have been made to Tres Pinos. Wheat and oat hay is raised and some barley, all dry farmed. The season is about two weeks later than the Hollister Valley. Sheep and cattle raising, with a small amount of dairying are the principal industries. Excellent hunting abounds in the surrounding mountains. Good roads connect Bear Valley with other sections of the county and the main highway from Hollister to Coalinga traverses the entire length. Between Bear Valley and San Benito diverges the 7-mile Branch Road, west to the Pinnacles.

Land Values—

Mountain land suitable for grazing is held from \$15 up, per acre, while farming land in the valley sells for \$50 to \$150 per acre.

Towns—

Cook is the postoffice and here is located a school and store to supply the thirty odd families who live in the valley.

BITTERWATER

AUTHORITY: George W. McConnell, County Assessor.

Location and Topography—

The Bitterwater Valley is situated about 10 miles south of the San Benito Valley and runs to the Monterey and San Benito County line. It is about 12 miles long and 1 to 1½ miles wide. It is drained by the San Lorenzo Creek which runs across the southern end and empties into the Salinas river. The soils are of the same general type and character as those of the San Benito Valley, very deep on the valley floor and rich in humus and nitrogen.

Products—

Grain, hay, honey, cattle, hogs, sheep and alfalfa are the chief products. Alfalfa is grown without irrigation. 3 to 4 cuttings averaging 1 to 1½ tons per cutting to the acre is the yearly crop. Here also are the largest apiaries in the county and the quality of the honey is unsurpassed, the bees having not only the alfalfa blossoms but an abundance of chaparral and manzanita and sage blossoms on the surrounding hills. All mail and freight facilities are via King City which also enjoys the trade of the ranchers living in Bitterwater Valley. Stock is driven on the hoof or hauled alive to King City for shipment.

Transportation—

An automobile stage carries mail, passengers and small freight to King City and good county roads lead through the Bitterwater Valley over the Lewis-Creek road through Priest Valley to Coalinga; north to Tres Pinos 56.2 miles or over the mountains to the southwest to King City 20 miles distant on the Coast line of the Southern Pacific R. R. There is no town in the valley but travelers may find accommodations at several of the ranches. The postoffice is Lonoak and two elementary schools actively train the youngsters of the district. At the northern end of the valley is the pumping station for the Associated Oil Company of California where the oil is heated before pumping over the mountain to Monterey from the Coalinga fields.

Big and Little Panoche Valleys

AUTHORITIES: Judge Stephen Langford, Llanada, James Colman, Panoche; A. G. Fruits, Tres Pinos; Geo. W. McConnell, County Assessor.

Location and Topography—

Big Panoche Valley lies about 22 miles southeast of Paicines and 26 miles southeast of Tres Pinos to which it is tributary for supplies and transportation. It extends about 12 miles in a southeasterly direction with an average width of 2 miles on the floor of the valley, which is nearly level with a drop of about 10 feet to the mile towards the south. At the northern end the Aguilas Creek which supplies water for stock flows into the Panoche Creek which drains the valley for its entire length. This in turn flows southward becoming a tributary to Silver Creek at the southern end of the valley. The Valley is surrounded on all sides by rolling hills, which on the east are of barren and sandy character suitable only for sheep pasturage during the winter and early spring months. No irrigation is practiced though ample opportunity to irrigate from wells is open to the enterprising farmer. Water is encountered at depths ranging from 15 to 45 feet. This valley lies about 25 miles northwest from Coalinga and is thought by many experts to be in the oil belt. The indications have been sufficiently strong to cause quite extensive boring, and drilling for oil goes on almost continually in various places on the west side of Big Panoche Valley, although oil in paying quantities has not yet been discovered.

Soil—

The soils of the valley floor run from the lightest of powdery loam through the loams into heavy clays. Most of the soils of the valley proper are very deep and rich. The soil of the rolling hills on the north, west and southeast varies greatly in character and texture, from gravelly loam to gravelly clay, and is underlaid at a depth of from 3 to 10 feet with gravel or limestone substrata.

Products, Transportation and Towns—

The entire valley is devoted to the livestock industry and barley and hay are the chief crops grown. As a livestock section it is known favorably throughout the State, and in normal years the pasturage affords facilities for fattening large numbers of beef cattle, horses and sheep, many of which are brought in from the San Joaquin Valley. It is unfortunate that better transportation facilities do not exist. Under present conditions all the stock is sold on the hoof delivered at Tres Pinos and, if the drive is hard and the season short, weight is lost above the normal amount during transit.

Barley, hay, wool, beef cattle and horses are the chief products.

Llanada is the postoffice for the valley and here and at Panoche are located stopping places for overland travelers and a general merchandise store is situated at the former.

Tributary Country—

The Little Panoche Valley lies northeast of the Big Panoche about four miles over the rolling sandy hills. Most of this valley lies in Fresno County and only about 250 acres of farming land which runs up into the rolling hills on the west, is in San Benito County. The greater part of this valley is owned by one family who farm for grain and hay and raise large herds of sheep and cattle. The sandy hills on the west are mostly government owned and useful only as sheep pasture during extraordinarily good years.

SAN BENITO

AUTHORITIES: Geo. W. McConnell, County Assessor; A. King Macomber, Paicines Rancho; R. G. Garner, Harry Leonard, San Benito.

Location and Topography—

The San Benito Valley extends from Hernandez on the south to just south of Paicines, a distance of about 50 miles and in places where the valley broadens out, about 1 mile wide. It follows the course of the San Benito River from which water is pumped for irrigation by some of the orchardists and alfalfa growers. Small streams feed the San Benito River throughout the length of the valley. There is no water company, these being all privately owned plants. The center of the valley is fairly level sloping towards the north. Hills hem in the agricultural land on both the east and west sides and afford pasture for many head of beef stock during normal years. The floor of the valley is sedimentary loam underlaid at great depth by water bearing gravel. Water is obtainable at from 12 to 25 feet. Drainage conditions here are most excellent.

Products—

This is essentially a cattle country and the chief exports are beef cattle, driven to Tres Pinos in carload lots for shipment. Hogs are trucked alive for similar shipments or driven in bands either to King City or Tres Pinos. Some range horses are bred and several fine draft stallions beget the work stock used in the valley. Hay and some grain are raised, but the season is nearly a month later than the Hollister or San Juan Valley, and little fruit except in small family orchards is grown. Truck and berry patches are found on nearly every ranch but the production is uncertain, depending upon the warmth and seasonal influences too much to be counted as a commercial asset. The chief agricultural lands lie along the San Benito River and are bench lands of sedimentary origin. The adjoining hills are devoted to the grain and hay crops.

Towns and Transportation—

The County Bonded Highway extends from the San Benito-Monterey county line at the southern end of the Bitterwater Valley throughout the entire length of the San Benito Valley. Automobile stages carrying passengers, mail and small freight make round trips between San Benito and Tres Pinos. From north to south the towns and postoffices in the valley are Paicines, San Benito and Hernandez.

VALLECITOS

AUTHORITY: John Ashurst.

Vallecitos lies about 3 miles south of the Big Panoche Valley and extends for about 7 miles southeast to the base of the New Idria Mts. The floor of the valley is gently rolling and has an average width of about two miles in the center but narrowing at either end. The entire valley is one of the finest natural pastures in Central California, and the rolling hills on the west are also used for winter and spring pasture. Some barley and hay is raised, but the season is late and short. So naturally adapted to beef cattle raising is this entire section that small attempt has been made to farm the land. In past years coal was mined in the mountains on the west but, being of inferior quality, mining was discontinued some four years ago. It is drained throughout its entire length by the Vallecitos Creek which runs about enough water to supply the stock. In normal years a head to eight acres is the allowance for pasturage.

Transportation—

The road from the New Idria mines, which joins the County Bonded Highway at Panoche, traverses the Vallecitos and Big Panoche Valleys. Automobile stages run between New Idria and Tres Pinos every other day, carrying passengers, small freight and mail. About two miles south of Vallecitos the road to Mendota branches to the east and this is also accessible from Panoche. Going out through the Little Panoche Valley one may reach Dos Palos in the San Joaquin Valley over a fairly good wagon road which is passable except in stormy weather. Motorists who wish to travel to Los Angeles and way points, after inspecting these three valleys, should turn south at Paicines on the county bonded highway which traverses the San Benito Valley south to the county line.

Land Values—

Land in the Big Panoche is held at about \$25 for valley land and \$10 for hill land. Grazing land if obtainable in Vallecitos would bring about \$12 per acre.

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FOR FURTHER INFORMATION
CALL ON OR WRITE
SAN BENITO COUNTY CHAMBER OF COMMERCE
HOLLISTER, CALIFORNIA.



SCENES AT THE PINNACLES